TRANSPORTATION

INTRODUCTION

The following summary of existing transportation conditions, probable significant transportation impacts from the Proposed Actions and alternatives, and any mitigation measures to mitigate significant project-related transportation impacts is based on the Transportation Technical Appendix (March 2004) prepared by The Transpo Group, Inc., included as **Appendix H** to this Draft EIS.

AFFECTED ENVIRONMENT

This section summarizes existing transportation system conditions in the study area, including the existing road network, traffic volumes, intersection levels of service, collision information, public transportation services, non-motorized transportation facilities and services, and planned roadway improvements.

Study Area

The study area for the transportation analysis in this EIS was defined by King County staff based on the anticipated travel patterns and the County's Integrated Transportation Program (ITP) regulations. The study area is generally bounded by NE 142nd Place to the north, Redmond-Fall City Road to the south, Avondale Road to the west, and West Snoqualmie Valley Road to the east. It includes all intersections that could be impacted by 20 percent of project-related traffic and at least 30 PM peak hour trips. Study area intersections are shown in **Figure 25**.

Road Network

Figure 4 in **Appendix H** shows the existing road network in the study area, including roadway functional classifications based on the King County Arterial Map (July 2002) and the City of Redmond's Comprehensive Plan.

Major roadways and arterials in the study area include: SR 520, Redmond-Fall City Road (SR 202), Novelty Hill Road, Avondale Road, Union Hill Road, West Snoqualmie Valley Road, 208th Avenue NE, and NE 132nd/133rd Street, Redmond Ridge Drive, Trilogy Parkway, Eastridge Drive, West Snoqualmie Valley Road, 236th/238th Avenue NE, and 232nd Avenue NE. Additional roadways serving the Panhandle site include NE 80th Street, 255th Avenue NE, and the 243rd/244th/248th Avenue NE corridor. These roadways serve the majority of locally generated traffic connecting to origins/destinations outside the study area. They provide access to the Redmond business district and to SR 520, which provides connections to areas west of Redmond, such as the Cities of Bellevue, Kirkland, and Seattle. See **Appendix H** for a complete discussion of the existing road network.

Figure 25
Study Intersections

Traffic Volumes

Figures 6 and 7 in **Appendix H** show existing AM and PM peak hour traffic volumes (October 2002 and January/February 2003) at study area intersections, and average daily traffic volumes on key study area road segments, respectively. Peak hour intersection traffic counts were collected by the Transpo Group, and daily traffic counts were provided by the City of Redmond, King County, and the Washington State Department of Transportation (WSDOT). Peak hour traffic volumes represent the highest hourly volume of vehicles passing through an intersection during a typical 7-9 AM and 4-6 PM peak period. (See **Appendix H** for a complete list of the data and sources of all traffic counts.)

Appendix H includes a discussion of traffic volumes on Novelty Hill Road, Union Hill Road, Avondale Road, 208th Avenue NE, NE 80th Street, and 243rd/248th Avenue NE. The directional split for these roadways show the predominant travel direction is toward Redmond in the AM and away from Redmond in the PM, the result of commuters traveling to/from work in Redmond, Bellevue and the other employment centers to the west from residential areas in the corridor and in Duvall, Carnation, and Monroe.

Traffic Operations

The operational characteristics of an intersection are determined by calculating the intersection's level of service (LOS). The intersection as a whole and its individual turning movements can be described with a range of LOS (A though F), with LOS A indicating free-flowing traffic and LOS F indicating severe congestion and long vehicle delays.

At signalized intersections, LOS is measured in average control delay per vehicle and is typically reported for the intersection as a whole. All-way, stop-controlled intersection LOS is expressed in terms of the average control delay of all of the movements, much like that of a signalized intersection. Two-way, stop-controlled intersection LOS is defined in terms of the average control delay of an individual movement(s).

Concurrency and Level of Service Standards

Under King County's Intersection Standard (IS), a project is defined as having a significant adverse impact at an intersection if the intersection would operate at a forecast LOS F, would be impacted by 30 or more trips from a development in one hour, and be impacted by at least 20 percent of the new traffic generated by the development within that hour. The standard applies to intersections that operate at LOS F under baseline conditions and meet the 30 trips and 20 percent of trips threshold, as well as to intersections that operate at LOS F as a result of project traffic and meet the 20/30 threshold. The IS require intersections that meet the threshold and operate at a calculated LOS F under baseline conditions, or that would degrade to LOS F with the addition of project traffic, must be returned to their pre-project condition or LOS E, respectively, through mitigation. Under the IS, mitigation could also be required where King County determines that a hazard to safety could reasonably result due to the impacts from the RRE Proposed Action (even though the traffic volume thresholds would not be met).

City of Redmond LOS standards apply to traffic within the City of Redmond that would be generated by development proposals outside of the City. The City of Redmond is divided into Transportation Management Districts (TMD) and has a specific LOS standard for each TMD. The district average arterial intersection LOS standard and the maximum volume-to-capacity (v/c) ratio permitted for each TMD is established by the City's Comprehensive Plan. While the

proposed projects are not located in one of the City of Redmond TMDs, the traffic that would be generated would primarily impact the Southeast Redmond TMD, which has an LOS standard of E.

The Washington State Department of Transportation (WSDOT) has an LOS standard of D for roadways under its jurisdiction that would be affected by traffic generated by development proposals; however, based on an Interlocal Agreement with King County, WSDOT has agreed to follow King County Intersection Standards for measuring the impacts of proposed developments and requesting mitigation.

In addition to intersection LOS standards, King County applies a two-part test to determine whether or not development proposals meet the County's concurrency standards. The first part, the Transportation Adequacy Measure (TAM), is based on the average weighted volume-to-capacity ratio of arterials and highways serving a Transportation Service Area (TSA). The second part of the concurrency test is the existence of unfunded critical links. Critical links are roadway segments that have a peak hour, peak direction v/c ratio greater than 1.1 and that are impacted by 30 percent or more of the project traffic. (In March 2003, the King County Council adopted a critical segment test to replace the critical link test; however, the critical link test was in effect at the time that the RRE and Panhandle developments received concurrency.) The Proposed Actions have been tested for and have received concurrency permits from King County. The proposed RRE residential units received a concurrency certificate in December 2002 (Certificate #01449) for up to 1,325 dwelling units, the proposed RRE recreation complex received a concurrency certificate in October 2002 for up to 12 sports fields (Certificate #01445), and the Panhandle residential units received a concurrency certificate in November 2001 (Certificate #01358) for up to 183 dwelling units.

In February 2003, a complaint was filed regarding the County's traffic concurrency management model. An independent investigation and evaluation in response to the complaint found the County's concurrency model to be reasonable, not flawed, and consistent with applicable federal guidelines, and recommended measures for improving quality control within KCDOT. The complaint represented a challenge to the overall system that King County uses for determining concurrency in unincorporated areas of the County, and not a challenge specifically to the RRE concurrency certificate or any other concurrency certificate issued by King County. No one has filed an appeal of the RRE transportation concurrency certificate, and that certificate remains valid. A detailed discussion of the complaint and findings of the evaluation is included in **Appendix H**.

Intersection Levels of Service

The study intersections were evaluated using Synchro 5, a software program that calculates LOS based on methods presented in the *Highway Capacity Manual* (HCM), 2000 Edition, and adjusted as directed by King County to provide a more conservative analysis (see **Appendix H** for more details). **Table 31** shows existing LOS, average control delays, and v/c ratio for weekday AM and PM peak hours for study area intersections. Control delay is the portion of the total delay for a vehicle approaching and entering a signalized intersection that is attributable to traffic signal operation (either a traffic signal or a stop sign). Study intersections 28, 29, 30 and 31 are not included in the analysis of existing conditions because they do not exist or are not open to traffic at this time. Study intersections 8, 10, and 19 are not included because they have a very limited volume of traffic under existing conditions.

Table 31
LEVEL OF SERVICE – EXISTING CONDITIONS

Int ID[1]	Location	Intersection Control	AM Peak Hour			PM Peak Hour		
			LOS[2]	Delay[3]	V/C or WM[4]	LOS	Delay	V/C or WM
1	Avondale Rd/NE 95th St	Signalized	F	101.1	1.14	E	58.2	0.99
2	Novelty Hill Rd/Avondale Rd	Signalized	E	57.4	0.93	F	87.6	1.11
3	Novelty Hill Rd/Redmond Rd	TWSC[7]	F	>150.0	SB	D	33.3	SB
4	Novelty Hill Rd/208th Ave NE	Signalized	B	17.1	0.70	C	29.3	0.85
5	Novelty Hill Rd/Cedar Park Crescent	Signalized	C	31.0	0.87	B	12.6	0.69
6	Novelty Hill Rd/224th Avenue NE	TWSC	F	>150.0	SB	B	13.5	SB
7	Novelty Hill Rd/Redmond Ridge Dr	Signalized	A	5.6	0.70	A	2.9	0.50
9	Novelty Hill Rd/Trilogy Pkwy	TWSC	C	15.6	SBRT	C	20.8	SBLT
11	Novelty Hill Rd/243rd Ave NE	TWSC	E	36.7	NB	D	25.1	NB
12	Novelty Hill Rd/W Snoqualmie Valley Rd	AWSC[8]	F	68.5	n/a[5]	F	82.7	n/a[5]
13	NE 124th St/W Snoqualmie Valley Rd	Signalized	C	22.7	0.82	D	44.5	0.85
14	SR 520 Westbound/SR 202	Signalized	D	54.8	0.80	F	93.4	0.97
15	SR 520 Eastbound/SR 202	Signalized	F	86.3	0.81	F	>150.0	0.91
16	Avondale Wy/Union Hill Rd	Signalized	B	13.3	0.49	B	12.0	0.57
17	Avondale Rd/Union Hill Rd	Signalized	F	90.7	1.06	F	>150.0	1.29
18	Union Hill Rd/208th Ave NE	Signalized	D	52.4	0.90	D	40.0	0.86
20	NE 80th St/Redmond Ridge Dr	TWSC	A	9.9	WB	A	9.4	WB
21	Union Hill Rd/238th Ave NE (North)	AWSC	B	11.1	n/a[5]	A	7.9	n/a[5]
22	Union Hill Rd/238th Ave NE (South)	TWSC	B	13.0	WB	B	12.1	WB
23	SR 202/236th Ave NE	Signalized	B	18.8	0.55	C	21.2	0.41
24	SR 202/Sahalee Wy NE	Signalized	F[6]	—	—	F[6]	—	—
25	SR 202/204th Pl NE	Signalized	F[6]	—	—	F[6]	—	—
26	NE 133rd St/218th Ave NE	TWSC	C	15.5	NB	B	13.9	NB
28	NE 142nd Pl/232nd Ave NE	TWSC	A	9.7	WB	A	9.3	WB

Source: The Transpo Group, 2004.

1. Intersection number corresponds to Figure 25, intersections are sorted by corridor. Intersection 8, 10, 19, 27, 29, 30 and 31 are not included in existing conditions because they do not exist, are not open to traffic, or have very limited traffic volumes.
2. Level of service, based on 2000 HCM methodology.
3. Average control delay in seconds per vehicle.
4. Volume-to-capacity ratio for signalized intersections or worst movement for stop-controlled intersections.
5. For all-way stop controlled intersections, delay is reported for the whole intersection. V/C ratio is not reported.
6. LOS based on field observations, calculated levels of service using Synchro indicate better operations than from field review. At this location, the mainline operates close to capacity.
7. Two-way stop-controlled intersection.
8. All-way stop-controlled intersection.

Ten study area intersections operate at LOS F (below the applicable standard) under existing conditions during either the AM or PM peak hour or both, and are listed below. For stop-controlled intersections, the LOS pertains to the worst approach/movement.

- (#1) Avondale Road/NE 95th Street (AM peak hour only);
- (#2) Novelty Hill Road/Avondale Road, (PM peak hour only);
- (#3) Novelty Hill Road/Redmond Road (AM peak hour only);
- (#6) Novelty Hill Road/224th Avenue NE (AM peak hour only);
- (#12) Novelty Hill Road/Snoqualmie Valley Road;
- (#14) SR 520 Westbound/SR 202 (PM peak hour only);
- (#15) SR 520 Eastbound/SR 202;
- (#17) Avondale Road/Union Hill Road;
- (#24) SR 202/Sahalee Way NE; and
- (#25) SR 202/204th Place.

Additional findings regarding the operation of these intersections are described in **Appendix H**.

SR 520 Overpass at SR 202

The SR 520 overpass at SR 202 is a key location within the study area; however, since this is a roadway segment and not an intersection, operations are measured in terms of volume to capacity ratio (v/c) rather than LOS. For the purpose of calculating the v/c ratios, the capacity was assumed to be 2,250, equal to the volume on the overpass during the AM peak hour (see **Appendix H** for details on the capacity of this road segment). This assumed that during the AM peak hour, the v/c ratio is 1.00, indicating that the roadway is operating at capacity. During the PM peak hour, the v/c ratio is 0.78, based on the same capacity.

Safety

The review of accident data covers both intersections and roadway segments. Data for intersections and road segments under the jurisdiction of the City of Redmond locations are for the three-year period between October 1, 1999 and September 30, 2001. Data for locations under the jurisdiction of King County and WSDOT are for the period January 1, 2000 to December 31, 2002. These data are the most recent available. City of Redmond, King County, and WSDOT staff indicated that the accident records they provided were complete.

WSDOT uses two major programs to identify and correct potentially unsafe locations. These are the High Accident Location (HAL) and High Accident Corridor (HAC) programs. A HAL is defined as a spot location, less than 1 mile long, determined to have a higher-than-average rate of severe accidents during the previous two years. A HAC is a section of a state highway longer than 1 mile, which has a higher-than-average number of severe accidents over a continuous time period.

King County uses a similar system to WSDOT, where HALs and High Accident Roadway Segments (HARS) are identified for future safety improvements. A location is considered either a HAL or a HARS if it experiences eight or more collisions during a three-year period.

The City of Redmond does not publish a list of high accident locations. Therefore, existing safety problems at intersections within the City were identified based on the number and/or rate

of accidents. Accident rates for roadway segments within the City were compared with King County average rates to also identify existing safety problems.

Intersections

Table 2 in **Appendix H** summarizes intersection accident data for study area intersections under City of Redmond jurisdiction. The historical data show no intersection-related fatal accidents at any study intersections. Six intersections have an average of five or more accidents per year. These include: both the SR 520 Westbound Ramp/SR 202 and the SR 520 Eastbound Ramp/SR 202 intersections. In general, the majority of accidents at these intersections were of the rear-end type, consistent with congestion at a signalized intersection. The remaining four intersections with averages of five or more accidents per year are located along SR 202 between SR 520 and 187th Avenue NE, with those furthest west (closest to SR 520) experiencing the greater number of accidents.

Eight collisions involving pedestrians or bicyclists were reported at study intersections between 2000 and 2002, none of which resulted in a fatality. Two occurred during 2000: one at the SR 202/NE 70th Street intersection and one at the Union Hill Road/Avondale Way intersection. During 2001, four pedestrian/bike collisions were reported: one at the SR 202/East Lake Sammamish Parkway intersection and three at the Avondale Road/180th Avenue NE intersection. This high number of pedestrian/ bike accidents at Avondale Road/180th Avenue NE provided the impetus for the City of Redmond to install a traffic signal at this location. Since the signal was constructed, no additional pedestrian/bike collisions have been reported at the intersection. During 2002, two pedestrian-/bike-related accidents were reported: one each at the SR 202/Sahalee Way and SR 202/236th Avenue NE intersections.

WSDOT Intersections. Within the study area, WSDOT has identified the following HALs along the SR 202 corridor. Accidents at these locations are predominantly rear-end type collisions. (See **Planned Improvements** below for additional discussion of these locations.)

- In the SR 520 interchange vicinity;
- In the 180th Avenue NE/East Lake Sammamish Parkway vicinity; and
- In the 228th Avenue NE vicinity (a traffic signal was installed in August 2000 to address this HAL).

King County Intersections. Within the study area, King County has identified the following HALs:

- Novelty Hill Road at 208th Avenue NE (this intersection was signalized and turn lanes added during Spring 2001 as part of the Redmond Ridge and Trilogy UPD development agreement, and only three accidents were recorded during 2000 to 2002, well below King County's HAL threshold); and
- NE 124th Street at W Snoqualmie Valley Road (this intersection was signalized during February 2002, after the period for which data was provided).

Roadway Segments

Table 3 in **Appendix H** summarizes accident rates by roadway classification for King County and WSDOT in 2001. The City of Redmond did not provide a summary of average accident rates by roadway classification.

Table 4 in **Appendix H** summarizes accident data between 2000 and 2002 (the same three-year period reported for intersections) for study area roadways. During this three-year period, one fatal collision occurred along a study corridor, on 208th Avenue NE in the vicinity of NE 93rd Place, involving a single vehicle striking a fixed object. Outside of the study period, two fatal collisions occurred within the study area, one in 1996 and the other in 1998, both along SR 202, and one in 2003 on Novelty Hill Road in the 243rd Avenue NE vicinity.

During the study period, there were two non-motorized accidents involving either pedestrians or bicyclists at non-intersection locations, one on Avondale Road just south of NE 90th Street, and the other on Union Hill Road just west of 208th Avenue NE. None resulted in a fatality.

Certain segments of study roadways had accident rates during the three-year period that are higher than the King County averages for the corresponding road types (shown in Table 3 of **Appendix H**) for King County data. These include:

- Novelty Hill Road, from 243rd Avenue NE to Snoqualmie Valley Road;
- 204th/208th Avenue NE, from SR 202 to Union Hill Road;
- 236th/238th Avenue NE, from SR 202 to Union Hill Road (South);
- 236th/238th Avenue NE, from Union Hill Road (North) to NE 80th Street;
- Union Hill Road, from the Redmond City Limits to 208th Avenue NE;
- Union Hill Road 1,800 to 2,800 feet east of 201st Avenue.
- Union Hill Road, from 208th Avenue NE to 238th Avenue NE;
- 232nd Avenue NE, from NE 133rd Street to Old Woodinville-Duvall Road;
- NE 80th Street from 238th Avenue NE to 260th Avenue NE;
- Avondale Road, from Avondale Way to NE 95th Street;
- Union Hill Road, from Avondale Way to Avondale Road;
- Avondale Road, from NE 95th Street to Novelty Hill Road; and
- SR 202, from 196th Avenue NE to 244th Avenue NE.

King County identifies the following two HARS within the study area:

- Novelty Hill Road, 2,400 to 3,650 feet east of 243rd Avenue; and
- Union Hill Road 1,800 to 2,800 feet east of 201st Avenue.

WSDOT identifies one study area roadway segment as a HAC:

- SR 202 between 196th and 244th Avenues NE.

Transit

Transit service in the study area is provided by King County Metro. Novelty Hill Road is served by Route 929, which connects Redmond, Duvall, Carnation, Fall City, Snoqualmie, and North Bend. Figure 8 in **Appendix H** shows Route 929 and the other roadways within the study area that also carry transit service based on conditions in June 2003. Service is provided only on weekdays, with four runs per day between 8 a.m. and 7 p.m. Service on Route 929 makes limited connections with local transit service to Preston, Cottage Lake, English Hill, and Woodinville; and regional transit service at the Bear Creek and Redmond Park-and-Ride lots.

The Redmond Park-and-Ride lot provides transit service to/from Bellevue, Kirkland, Woodinville, the University District, and downtown Seattle. The Bear Creek Park-and-Ride lot provides transit service to/from Woodinville, Overlake, Crossroads, downtown Bellevue, the University District, and downtown Seattle. Some of the routes provided from these park-and-ride lots are operated by Sound Transit.

UPD Transit and Transportation Management Programs

The approved Redmond Ridge Transit Plan identifies roadway and other design requirements to accommodate future internal and external transit service related to ongoing development of the existing Redmond Ridge UPD. The Transit Plan has been combined with the required Transportation Management Program (TMP) as one document. The plan is updated on an annual basis when construction activity is expected in the Redmond Ridge UPD during the following year.

The original Redmond Ridge Transit Plan was approved by King County during 1999, and is updated on an annual basis. The most recent update was completed in July 2003 and submitted to King County for review.

The July 2003 Redmond Ridge Transportation Management Program and Transit Service Plan was prepared by the Greater Redmond Transportation Management Association (GRTMA). (The Redmond Ridge Homeowners Association has contracted with GRTMA to provide TMP-related services.) The current programs include: transportation coordination, promotion of transportation alternatives, ridematching services, free one-month transit passes for new residents and business park employees, park-and-pool lots within Redmond Ridge, a system of non-motorized facilities, and coordination of potential transit or shuttle van services. (See **Appendix H** for a complete description of the program.)

The Trilogy at Redmond Ridge UPD permit requires that an updated TMP be approved by King County on an annual basis. The current update to the plan was submitted to King County in February 2003, but has not yet been approved. As with the Redmond Ridge TMP, the Trilogy TMP identifies basic and optional elements designed to reduce both on and off-site vehicular impacts.

Non-Motorized Facilities

Pedestrian activity in the general Bear Creek area to the east of Avondale Road is currently minimal due to the long distances between origin and destination, such as home to shopping. The highest pedestrian levels are currently in the vicinity of the schools located in the western portion of the study area, around the Union Hill Road/ 208th Avenue NE intersection. In the future, it is anticipated that pedestrian activity in the vicinity of the sites will increase as development of the Redmond Ridge and Trilogy UPDs progresses, and the retail and business park components are completed. The completion of these components will reduce the lengths of some trips, encouraging walking as a mode of transportation.

Figure 8 in **Appendix H** shows existing and planned non-motorized facilities in the vicinity of the RRE and Panhandle sites. The Bear Creek area to the east of Avondale Road is generally rural in nature (with the exceptions of the UPDs) with single-family homes on large lots. Due to the low density of development in the area, many existing roadways are not equipped with sidewalks. The exceptions to this are in the vicinity of the existing UPDs where sidewalks have

been constructed along Novelty Hill Road, and along all internal UPD roadways. Sidewalks also exist along Avondale Road south of NE 133rd Street and along sections of Union Hill Road within the City of Redmond.

Shared roadways and footpaths are provided along some corridors within the Bear Creek area. Bike lanes within the study area are currently limited to portions of Avondale Road, Union Hill Road, and East Lake Sammamish Parkway. In addition, bicycle lanes have been constructed as part of the improvements made to Novelty Hill Road in the vicinity of the UPDs and on new arterials within the UPDs.

Within the Redmond Ridge and Trilogy UPDs, a variety of pedestrian facilities are provided along Cedar Park Crescent, Redmond Ridge Drive, and Trilogy Parkway NE. These roadways include portions of bike lanes and wide paved sidewalks on both sides of the road. UPD trails, crosswalks, and equestrian facilities, such as raised push buttons for the crosswalks, are located along Redmond Ridge Drive. These facilities support pedestrian, bicycle and equestrian activity both within the UPDs and in the surrounding area.

In addition to on-street facilities, King County has developed a system of Regional Trails. Existing Regional Trails in the Bear Creek area are the Puget Power Trail and the Tolt Pipeline Trail, which are both soft surface trails. The Puget Power Trail is an east-west trail connecting the Sammamish River Trail to the west, and Farrel McWhirter Park to the east. The Tolt Pipeline Trail, also an east-west trail, connects with the Sammamish River Trail to the west, and West Snoqualmie Valley Road to the east.

In other areas of the Bear Creek planning area, roadway shoulders on many roads are provided for pedestrians, bicycle, and equestrian use. King County uses paved shoulders or separate bike lanes for bicyclists and gravel shoulders for equestrian use. Figure 9A in **Appendix H** shows existing non-motorized facilities in the study area as identified on the King County Bicycling Guide Map (2nd Edition, November 2000). Figure 9B in **Appendix H** shows King County's additional planned non-motorized transportation routes serving the Bear Creek area as shown on the Bicycling Guidemap. Some of the planned trails have been or will be replaced with new, alternative facilities within the UPDs. King County is currently working on an update to the Non-motorized Transportation Plan which is expected to be published later this year; however, until this update is adopted, the King County Bicycling Guidemap is used as a source. See **Appendix H** for a discussion of shoulder widths on study area roadways. See the **Public Services and Facilities - Park and Recreation** section for additional discussion of non-motorized facilities.

Programmed Roadway Improvements

This section describes transportation improvements planned in the study area by King County, the City of Redmond, and WSDOT, as identified in the King County Six-Year Capital Improvement Program for 2003 to 2008; the City of Redmond six-year Transportation Improvement Program (TIP) for 2004 to 2009; the WSDOT Sunshine Report, which includes all projects that WSDOT plans to construct upon available funding; and WSDOT's recently published summary of funded projects that are part of the "Nickel Funding Package" passed by the Washington State Legislature during 2003. Figure 9 of **Appendix H** shows short term planned improvements in the study area from these reports. King County, Redmond, and WSDOT also have long-range transportation plans that provide additional information on potential improvements in the area.

Key existing transportation improvement plans are discussed below. A discussion of these planned improvements and their funding status is included in **Appendix H**, and a complete list of improvements planned by King County, the City of Redmond, and WSDOT in the vicinity of the sites is shown in Table 5 of **Appendix H**. The improvements listed in Table 5 of **Appendix H** are based on programs developed prior to the State Supreme Court's ruling on Initiative 776, which eliminates the $15 local option fee that King County has been collecting. A decision about the impacts to King County's CIP regarding possible postponement or changes to the scope of improvement projects has not been made. This future decision and associated changes in the plan may affect some of the short- and/or long-term improvements in the project study area.

Key short-term planned improvements (within the next 6 years) include:

- Novelty Hill Road (widening from Avondale Road to 244th Avenue NE, east of the Trilogy UPD; King County and the City of Redmond are both part of this planned project; in addition to alternatives that widen Novelty Hill Road, King County is also considering alternatives that include improvements to other roadway corridors serving the area; a decision on the preferred alternative may come during the review of RRE; the environmental review phase of the project is currently underway).
- Union Hill Road (Phase 1 includes widening to complete a five-lane roadway section with bike lanes and sidewalks between 178th Place NE and 188th Avenue NE and is scheduled to begin construction during 2004. The funding for this section is a condition of the Settlement Agreement between Redmond, King County, and the Redmond Ridge and Trilogy UPDs. Phase 2 includes construction of additional roadway capacity, bike lanes, illumination, sidewalks and traffic signal system upgrades at the Union Hill Road/Avondale Road and Union Hill Road/178th Place NE intersections).
- 238th Avenue NE/Union Hill Road intersection (realignment and signalization).
- Avondale Road (widening between NE 155th Street and NE 168th Street).
- Avondale Road/NE 128th and NE 132nd Streets intersection improvements (additional turn lanes, signal improvements, and non-motorized facilities).
- Avondale Road/NE 95th Street intersection (traffic signal system upgrade).
- Avondale Road/Novelty Hill Road (traffic signal system upgrade).
- 185th Avenue Extension (complete185th Avenue NE corridor)

Longer-term planned improvements include:

- Novelty Hill Road/West Snoqualmie Valley Road intersection (realigning the Novelty Hill Road approach with the West Snoqualmie southbound approach, and installing a permanent traffic signal). Construction of the project is beyond the current six-year CIP for King County; however, a temporary traffic signal is required to be installed at the intersection of Novelty Hill Road/ West Snoqualmie Valley Road as a condition of the Redmond Ridge and Trilogy UPD permits.
- SR 520 improvements (Stage 3 SR 520/SR 202 interchange improvements including a second two-lane overcrossing of SR 202 and a new flyover ramp from westbound SR 202 to westbound SR 520; addition of HOV lanes between West Lake Sammamish Parkway and SR 202; and improvements to the West Lake Sammamish Parkway/SR 520 interchange). These planned improvements are currently funded for construction by approximately 2012/2013.
- City of Redmond long range projects RED-TFP-072b, 160th Avenue NE (NE 90th Street to Redwood Road) and RED-TFP-117, 188th Avenue NE from SR 202 to Union Hill

Road. These two projects are not fully funded in the six year plan, but they are included as Redmond Mitigation Payment System (MPS) projects.

2010 Baseline Conditions

This section defines the 2010 baseline conditions for land use, transportation facilities and traffic demand without the RRE and Panhandle proposals. The purpose of the 2010 baseline conditions is to establish conditions for the evaluation of impacts that would be generated by the Proposed Actions and Alternatives. Baseline conditions are the same as those discussed under Alternative 2, the No Action Alternative (see **Chapter 2** for a description of Alternative 2).

At the direction of King County, two baseline forecasts for 2010 were created for this EIS transportation analysis. The first 2010 baseline scenario assumes that planned improvements to SR 520, which are currently funded for construction by approximately 2012/2013, would not be constructed by 2010. The second scenario assumes construction of these improvements by 2010. The planned SR 520/SR 202 interchange improvements and associated HOV lanes are discussed under Programmed Roadway Improvements above and in **Appendix H**. Both baseline scenarios assume completion of local and regional planned transportation improvements that are currently anticipated to be funded and constructed by 2010 (see the discussion of short-term planned improvements under **Programmed Roadway Improvements** above). Both baseline scenarios also assume buildout of the Redmond Ridge UPD, Trilogy UPD, and The Village at Redmond Ridge retail area. In this EIS analysis, the two 2010 baseline condition scenarios are the same as the two evaluations of the Alternative 2 (No Action), with and without SR 520 improvements.

Traffic Forecasting Process

Forecasts were developed for AM and PM peak hour conditions for the baseline condition/No Action Alternative using a modification of King County's travel forecasting model. Since the County model is used to forecast 2020 traffic volumes, it was adjusted to the 2010 horizon year for this EIS based on forecast land use data and future transportation system assumptions. The model was also adjusted to provide greater detail within the study area for this EIS.

Adjustments to land use forecasts were based on recent Puget Sound Regional Council (PSRC) 2010 land use forecasts, in order to reflect estimates of 2010 households and employment. To assure that developments in the "pipeline" were accounted for, PSRC estimates were compared to King County concurrency permit data for current developments (since the development pipeline projects with concurrency permits reflect development through 2008, two additional years of growth were estimated through calculation) and the more conservative (higher) estimate was used. Similar adjustments were made based on permit data provided by the cities of Sammamish and Redmond (see **Appendix H** for details).

The King County modeling process for trip generation is based on regionally developed estimates for classifications of households by income level, rather than by housing unit type (i.e., single-family detached, multifamily), and on number of employees by type of employment (retail, service, manufacturing etc.). While the King County model estimates fewer trips than the *Trip Generation* (Institute of Transportation Engineers [ITE], 1997), King County has previously tested the model based on actual trips generated by the Klahanie development on the Sammamish Plateau, and the model was found to compare favorably. The model trip generation was applied to the 2010 land use data, and resulted in lower residential trip

generation rates for the Redmond Ridge UPD, as compared to the trip generation reported in the original Redmond Ridge EIS (Northridge) (1995/1996) and permit approval. However, in order to provide consistency with the previous environmental reviews and approvals and a conservative analysis, the model trip generation was adjusted upward to match the trip generation from the prior EISs. (See **Appendix H** for a detailed discussion of the forecasting process and other trip generation adjustments.)

Model adjustments also reflect inclusion of the full arterial system and major access roads to be built within the Redmond Ridge and Trilogy UPDs, and inclusion of projects that are identified as funded by the City of Redmond, King County and WSDOT. For example, at the direction of King County, the model assumes that Novelty Hill Road will be a three-lane facility with "super intersections" of five lanes; this improvement is still undergoing environmental review. (For a complete list of adjustments to the model transportation network, see **Appendix H**; for a specific discussion of assumptions related to the Novelty Hill Road improvements, see the discussion of Traffic Operations – Assumptions under the No Action Alternative in **Appendix H**.)

Baseline Traffic Volumes

Without SR 520 Improvements. Forecasted 2010 baseline daily traffic volumes without SR 520 improvements are shown in **Figure 26**, and AM and PM peak hour traffic forecasts for study intersections are shown in **Figure 27**. PM peak hour traffic volumes on Novelty Hill Road east of 208th Avenue NE are forecast to increase by more than 60 percent between 2002 and 2010.

This increase reflects buildout of the Redmond Ridge and Trilogy UPDs combined with additional non-UPD development to the east, in Carnation, Duvall, and Snohomish County. The increase in traffic also reflects the improved capacity of Novelty Hill Road based on the three-/five-lane alternative for the corridor. The highest traffic volumes in the Novelty Hill Road corridor are projected for the segment between Redmond Ridge Drive and Trilogy Parkway. As discussed under Traffic Operations below, these volumes will exceed the capacity of the road segment. Forecast PM peak hour traffic volumes on Avondale Road are projected to increase by more than 10 percent over 2002 volumes in the northbound direction just south of Novelty Hill Road. Similar growth rates are found on Avondale Road north of Novelty Hill Road. Traffic volumes on 238th Avenue NE south of Redmond Ridge will also increase substantially, with PM peak hour volumes on 238th Avenue NE north of Union Hill Road approaching 1,100 vph (in both directions), as compared to less than 200 vph in 2002. This increase reflects buildout of the Redmond Ridge UPD. See the discussion of the No Action Alternative in **Appendix H**, for a complete discussion of forecasted 2010 baseline traffic volumes.

With SR 520 Improvements. Completion of the recently funded SR 520/SR 202 Stage 3 interchange project and HOV lanes on SR 520 will add capacity to the area roadway system. An increase of approximately 900 to 1,000 vph on SR 520 between SR 202 and West Lake Sammamish Parkway during the AM and PM peak hours is forecast to result by 2010. Most of the increase will be in the westbound direction during the AM peak hour and eastbound during the PM peak hour. The shift of traffic to SR 520 will result in reduced traffic volumes on SR 202 and surface streets in downtown Redmond.

Shifts of traffic to/from the Southeast Redmond area are also forecast. Traffic volumes on SR 202 between the interchange and East Lake Sammamish Parkway are forecast to increase in the PM peak hour by more than 850 vph on SR 202, as compared to 2010 conditions without

Figure 26
Daily Traffic Forecast—2010 Baseline Condition without SR 520 Improvements

Figure 27
AM and PM Peak Hour Traffic Forecast—2010 Baseline Condition without SR 520 Improvements

Figure 27 cont'd

SR 520 improvements. As local traffic shifts to SR 202, traffic on Union Hill Road between Avondale Road and 178th Place NE will decline by more than 500 vph; however, this shift may be overstated due to the zone structure of the forecasting model (see **Appendix H** for more information).

The SR 520 improvements will result in an increase of approximately 90 to 100 vph on Avondale Road between Avondale Way and Novelty Hill Road during the PM peak hour; however, projected congestion will limit these increases. Traffic volumes on Novelty Hill Road will change very little with the SR 520 improvements, including a PM peak hour increase of 15 to 20 vph between Avondale Road and 208th Avenue NE. PM peak hour increases in the vicinity of the Redmond Ridge and Trilogy UPDs will be five vehicles or less.

See the No Action Alternative section in **Appendix H**, for a complete discussion of 2010 baseline traffic volumes.

Baseline Traffic Operations

Without SR 520 Improvements - Intersection Levels of Service. **Tables 32** and **33** summarize the forecasted AM and PM peak hour levels of service for the 2010 baseline condition/No Action Alternative, respectively. Intersections forecast to operate at LOS F during either the AM or PM peak hour are listed below. All other intersections would operate at LOS E or better.

- (#3) Novelty Hill Road/Redmond Road (AM peak hour only).
- (#6) Novelty Hill Road/Redmond Ridge Retail Access.
- (#8) Novelty Hill Road/234th Avenue NE (AM peak hour only).
- (#11) Novelty Hill Road/243rd Avenue NE.
- (#17) Avondale Road/Union Hill Road (AM peak hour only). (During the PM peak hour, the intersection is calculated to operate at LOS E with a v/c ratio of 1.10. The City of Redmond's planned improvements to add lanes on all approaches to the intersection will help reduce total delays, especially during the PM peak hour; however, improvements beyond those currently funded are not likely by 2010.)
- (#22) Union Hill Road/238th Avenue NE (south).
- (#23) SR 202/236th Avenue NE (AM peak hour only).

Several potential improvements are identified below to resolve baseline LOS F conditions. These improvements are not included as part of a currently funded CIP project. **Tables 32** and **33** show LOS both without and with these potential improvements. **Table 33a** identifies planned roadway improvements and potential improvements identified to resolve baseline LOS F conditions.

(#3) Novelty Hill Road/Redmond Road. Separate left- and right-turn lanes on Redmond Road could be provided. This would better facilitate right turns onto westbound Novelty Hill Road. This improvement would not resolve the LOS F condition, but the poor LOS would affect fewer vehicles. Installation of a traffic signal would result in LOS C in the AM peak hour; however, it may attract more traffic to Redmond Road and may not be warranted.

(#6) Novelty Hill Road/Redmond Ridge Retail Access. King County is addressing this issue as part of the Novelty Hill Road CIP project environmental review, but previously indicated that

Table 32
LEVEL OF SERVICE – 2010 BASELINE CONDITION WITHOUT SR 520 IMPROVEMENTS, AM PEAK HOUR*

Int ID[1]	Location	Intersection Control	No Action			No Action with Improvements**		
			LOS[2]	Delay[3]	V/C or WM[4]	LOS	Delay	V/C or WM
1	Avondale Rd/NE 95th St	Signalized	D[8]	52.4	1.05			
2	Novelty Hill Rd/Avondale Rd	Signalized	D[9]	54.6	0.88			
3	Novelty Hill Rd/Redmond Rd	TWSC[5]	F[10]	>150.0	SB	F[11] C[12]	>150.0 33.7	SBL 0.82
4	Novelty Hill Rd/208th Ave NE	Signalized	C[13]	27.9	0.83			
5	Novelty Hill Rd/Cedar Park Crescent	Signalized	D[14]	48.0	0.99	C[15]	27.8	0.88
6	Novelty Hill Rd/Redmond Ridge Retail Access	TWSC	F[16]	>150.0	NBL	F[41] E[17] B[18]	>150.0 50.0 13.9	SB NBL SBR
7	Novelty Hill Rd/Redmond Ridge Dr	Signalized	C[19]	27.2	0.93	C[20]	23.1	0.91
8	Novelty Hill Rd/234th Ave NE	TWSC	F[21]	>150.0	SB	D[22]	32.1	EBL
9	Novelty Hill Rd/Trilogy Pkwy	Signalized	D[23]	35.4	0.89			
10	Novelty Hill Rd/Eastridge Drive	Signalized	D[24]	54.0	0.96			
11	Novelty Hill Rd/243rd Ave NE	TWSC	F[6]	53.5	NB	D[26] B[27] B[28]	29.8 12.4 10.3	NB 0.86 0.17
12	Novelty Hill Rd/W Snoqualmie Valley Rd	Signalized	D[29]	53.1	1.01			
13	NE 124th St/W Snoqualmie Valley Rd	Signalized	E[30]	57.7	0.99			
14	SR 520 Westbound/SR 202	Signalized	D[6]	49.3	0.86			
15	SR 520 Eastbound/SR 202	Signalized	E[6]	72.4	0.86			
16	Avondale Wy/Union Hill Rd	Signalized	B[6]	12.8	0.63			
17	Avondale Rd/Union Hill Rd	Signalized	F[31]	85.8	1.04			
18	Union Hill Rd/208th Ave NE	Signalized	E[6]	68.9	0.99			
19	NE 80th St/255th Ave NE	TWSC	A[6]	8.5	SB			
20	NE 80th St/Redmond Ridge Dr	TWSC	C[6]	20.5	WB			
21	Union Hill Rd/238th Ave NE (North)	Signalized	B[32]	14.8	0.69			
22	Union Hill Rd/238th Ave NE (South)	TWSC	F[6]	96.0	WB	C[33] C[34]	22.0 32.3	WBR 0.84
23	SR 202/236th Ave NE	Signalized	F[6]	80.4	1.04	D[35]	52.3	0.82
24	SR 202/Sahalee Wy NE	Signalized	D[36]	54.7	0.96			
25	SR 202/204th Pl NE	Signalized	D[37]	48.4	1.02			
26	NE 133rd St/218th Ave NE	TWSC	E[6]	35.6	NB			
27	NE 133rd St/232nd Ave NE	TWSC	D[38]	34.8	SB			
28	NE 142nd Pl/232nd Ave NE	TWSC	B[6]	13.4	WB			
29	Muirwood Dr/Trilogy Pkwy	TWSC	A[7]	9.2	EB			
30	Muirwood Dr/Eastridge Dr	TWSC	A[7]	9.0	EB			
31	Village Retail Access/Trilogy Pkwy	TWSC	B[7]	10.6	EBL			

Source: The Transpo Group, 2004.

* Footnotes are described in Table 33a.

** A blank space indicates that additional improvement have not been identified. Therefore, the LOS and delay values in the columns to the left would be the result.

Table 33
LEVEL OF SERVICE – 2010 BASELINE CONDITION WITHOUT SR 520 IMPROVEMENTS, PM PEAK HOUR*

Int ID[1]	Location	Intersection Control	No Action			No Action with Improvements**		
			LOS[2]	Delay[3]	V/C or WM[4]	LOS	Delay	V/C or WM
1	Avondale Rd/NE 95th St	Signalized	C[8]	33.2	0.90			
2	Novelty Hill Rd/Avondale Rd	Signalized	E[9]	60.8	1.06			
3	Novelty Hill Rd/Redmond Rd	TWSC[5]	D[10]	31.8	SB	C[11] B[12]	18.1 19.1	SBL 0.90
4	Novelty Hill Rd/208th Ave NE	Signalized	D[13]	44.9	0.99			
5	Novelty Hill Rd/Cedar Park Crescent	Signalized	C[14]	21.3	0.79	C[15]	21.2	0.79
6	Novelty Hill Rd/Redmond Ridge Retail Access	TWSC	F[16]	>150.0	NBL	C[41] F[17] C[18]	23.2 >150.0 18.5	SB NBL NBR
7	Novelty Hill Rd/Redmond Ridge Dr	Signalized	E[19]	72.0	1.10	D[20]	45.6	0.99
8	Novelty Hill Rd/234th Ave NE	TWSC	E[21]	48.9	SB	D[22]	28.3	WBL
9	Novelty Hill Rd/Trilogy Pkwy	Signalized	C[23]	30.2	0.92			
10	Novelty Hill Rd/Eastridge Drive	Signalized	C[24]	28.8	0.83			
11	Novelty Hill Rd/243rd Ave NE	TWSC	F[6]	>150.0	NB	F[26] A[27] A[28]	>150.0 4.6 5.4	NB 0.73 0.73
12	Novelty Hill Rd/W Snoqualmie Valley Rd	Signalized	D[29]	49.9	0.96			
13	NE 124th St/W Snoqualmie Valley Rd	Signalized	C[30]	24.2	0.71			
14	SR 520 Westbound/SR 202	Signalized	E[6]	68.2	0.97			
15	SR 520 Eastbound/SR 202	Signalized	D[6]	53.0	1.03			
16	Avondale Wy/Union Hill Rd	Signalized	B[6]	19.1	0.81			
17	Avondale Rd/Union Hill Rd	Signalized	E[31]	78.7	1.10			
18	Union Hill Rd/208th Ave NE	Signalized	D[6]	38.8	0.84			
19	NE 80th St/255th Ave NE	TWSC	A[6]	8.4	SB			
20	NE 80th St/Redmond Ridge Dr	TWSC	C[6]	21.1	WB			
21	Union Hill Rd/238th Ave NE (North)	Signalized	B[32]	15.2	0.65			
22	Union Hill Rd/238th Ave NE (South)	TWSC	F[6]	>150.0	WB	E[33] C[34]	41.8 20.5	WBL 0.91
23	SR 202/236th Ave NE	Signalized	E[6]	60.7	0.82	D[35]	36.9	0.75
24	SR 202/Sahalee Wy NE	Signalized	D[36]	50.9	0.96			
25	SR 202/204th Pl NE	Signalized	C[37]	20.6	0.81			
26	NE 133rd St/218th Ave NE	TWSC	D[6]	31.1	SB			
27	NE 133rd St/232nd Ave NE	TWSC	C[38]	18.1	SB			
28	NE 142nd Pl/232nd Ave NE	TWSC	B[6]	12.0	EB			
29	Muirwood Dr/Trilogy Pkwy	TWSC	A[7]	9.4	EB			
30	Muirwood Dr/Eastridge Dr	TWSC	A[7]	9.4	EB			
31	Village Retail Access/Trilogy Pkwy	TWSC	C[7]	17.4	EBL			

Source: The Transpo Group, 2004.

* Footnotes are described in Table 33a

** A blank cell indicates that additional improvements have not been identified. Therefore, the LOS and delay values in the columns to the left would be the result.

Table 33a
FOOTNOTES FOR TABLES 32 AND 33

1. Intersection number corresponds to Figure 3, intersections are sorted by corridor.
2. Level of service, based on 2000 HCM methodology.
3. Average control delay in seconds per vehicle.
4. Volume-to-capacity ratio for signalized intersections or worst movement for stop controlled intersections.
5. Two-way Stop Controlled Intersection.
6. Intersection geometry/control unchanged from existing conditions.
7. New Intersection for 2010. Constructed as part of the Village at Redmond Ridge.
8. Assumes City of Redmond CIP project #S18/KC CIP project #100901. Construct additional northbound lane to accommodate right-turns at the intersection of Avondale Road/Novelty Hill Road.
9. Assumes City of Redmond CIP project #S18/KC CIP project #100901. Widen Novelty Hill Road to five lanes to allow two eastbound lanes and a free northbound right-turn movement. Also, construct exclusive westbound right-turn lane.
10. Assumes KC CIP project #100992. Constructs one additional through lane in each direction on Novelty Hill Road through the intersection.
11. Adds exclusive southbound turn lanes in addition to KC CIP project #100992. (See footnote 10).
12. Assumes traffic signal in addition to KC CIP project #100992. (See footnote 10).
13. Assumes KC CIP project #100992. Constructs one additional through lane in each direction on Novelty Hill Road through the intersection.
14. Eastbound curb lane converted from right-turn only to through/right-turn lane. Left turns from Novelty Hill Road have protected signal phasing.
15. Novelty Hill Road, from Cedar Park Crescent to 234th Avenue NE widened to four/five lanes.
16. Northbound approach to intersection opened to serve Redmond Ridge Retail Center.
17. Novelty Hill Road, from Cedar Park Crescent to 234th Avenue NE widened to four/five lanes.
18. Novelty Hill Road, from Cedar Park Crescent to 234th Avenue NE widened to four/five lanes. Also northbound and southbound approaches restricted to allow only right-turn egress only (full ingress maintained).
19. Existing geometry unchanged, westbound left-turns have protected signal phasing.
20. Novelty Hill Road, from Cedar Park Crescent to 234th Avenue NE widened to four/five lanes (improvement of this section of Novelty Hill Road was not assumed as part of the County's CIP project).
21. Open northbound approach to intersection and west-to-south left-turn lane to serve Village Retail Center.
22. Southbound approach restricted to allow right-turn egress only (full ingress maintained).
23. Traffic signal activated, and northbound approach to intersection opened.
24. Traffic signal installed per Trilogy UPD permit.
25. Not used for 2010 No Action.
26. Adds exclusive westbound left-turn lane and two-stage gap acceptance for northbound left turns.
27. Existing geometry unchanged, assumes traffic signal installed.
28. Assumes traffic signal installed, westbound left-turn lane constructed and geometry revised to allow free flow westbound through movement.
29. Assumes installation of traffic signal proposed in KC CIP project #200301 and condition of the Redmond Ridge and Trilogy UPD permits.
30. Assumes KC CIP project #201101. Exclusive northbound right-turn and southbound left-turn lanes constructed.
31. Assumes City of Redmond CIP project #C14. Addition of exclusive northbound right-turn lane, second southbound left-turn lane constructed, third eastbound through lane, and exclusive turn-lanes on westbound approach.
32. Assumes KC CIP project #101101. Signal installed and exclusive northbound left-turn lane constructed.
33. Adds exclusive westbound turn lanes, a southbound left-turn lane, and two-stage gap acceptance for westbound left turns.
34. Existing geometry unchanged, assumes traffic signal installed.
35. Adds exclusive westbound right-turn lane.
36. Assumes KC CIP project #200997 and WSDOT Sunshine Report project #W-1. Turn lanes on all approaches and second WB through lane constructed; north-to-west left turns allowed from two-lanes.
37. Assumes WSDOT Sunshine Report project #W-1. Adds second through lane in both directions.
38. Adds exclusive eastbound left-turn lane and exclusive westbound right-turn lane on Trilogy UPD site.
39. Not used for 2010 No Action.
40. Not used for 2010 No Action.
41. Assumes restriction of Redmond Ridge retail access (south leg) to right-in/right-out movements. Also assumes provision of a south-to-east left-turn acceleration/merge lane and two-stage gap acceptance for that movement.

they do not want to signalize this location. The Northridge UPD Permit and the Notice on Title for the Redmond Ridge Retail project indicates that the County may eliminate the north-to-west left-turn movement at any time through construction of a "pork chop" style turn island in the retail driveway. Allowing only right turns from the northbound or southbound approaches would improve PM peak hour operations from LOS F to LOS C or better.

(#7) Novelty Hill Road/Redmond Ridge Drive. King County is evaluating widening improvements for this road segment as part of the Novelty Hill Road CIP currently under environmental review. Widening the road to provide two westbound through lanes would resolve the LOS F condition.

(#8) Novelty Hill Road/234th Avenue NE. Restricting the southbound approach to right turns only would improve operations to a calculated LOS C during the AM and PM peak hours. The very low volume for the east-to-north left turn would operate at a calculated LOS D during the AM peak hour, and the west-to-south left-turn to the Village Retail Center would operate at a calculated LOS D during the PM peak hour. A signal would not be warranted and King County has indicated that they do not want a signal at this location.

(#11) Novelty Hill Road/243rd Avenue NE. Providing an acceleration/merge lane similar to the existing Redmond Road/Novelty Hill Road intersection could reduce delays and improve safety; however, PM peak hour LOS would still be F. Installation of a traffic signal would result in a calculated LOS B or better during both AM and PM peak hours; however, the forecast traffic volumes would not warrant installation of a signal.

(#22) Union Hill Road/238th Avenue NE (south). Providing separate left- and right-turn lanes on the westbound approach and a west-to-south merge lane would improve operations to LOS C during the AM peak hour and LOS E during the PM peak hour. Installation of a traffic signal would result in a calculated LOS B during the AM peak hour and LOS C during the PM peak hour; however, the forecast traffic volumes likely do not warrant installation of a signal.

(#23) SR 202/236th Avenue NE. Addition of a west-to-north right-turn lane would result in LOS D during both the AM and PM peak hours. WSDOT has not identified this type of improvement in their current plans.

With the identified improvements (see **Table 33a** for further details), the following intersections will operate at a forecast LOS F during the AM and/or PM peak hour under the 2010 baseline condition/No Action Alternative:

- (#11) Novelty Hill Road/243rd Avenue NE (PM only; assumes addition of exclusive westbound left-turn lane, two-stage gap acceptance for northbound left-turn lane and acceleration/merge lane; would function at LOS A with existing geometry and addition of a signal, or with a signal and revised geometry; see **Table 33** and notes in **Table 33a**); and
- (#17) Avondale Road/Union Hill Road (AM only).

Without SR 520 Improvements – Roadway Traffic Operations. Roadway segments that would exceed capacity under the baseline condition/No Action Alternative are listed below. An overview of potential traffic operations under the 2010 baseline condition/No Action Alternative on study area roadways that would serve as primary access/egress routes for the proposed developments is included in **Appendix H**.

- Novelty Hill Road. Between Redmond Ridge Drive and 234th Avenue NE (Trilogy), AM westbound and PM eastbound volumes will exceed estimated capacity (based on the three-/ five-lane configuration; Figure 11 of **Appendix H** provides a schematic of the assumed configuration of Novelty Hill Road for under the baseline conditions). East of Trilogy, AM westbound and PM eastbound traffic volumes will approach or exceed the capacity of the two-lane road section.
- Avondale Road. Northbound PM peak hour volumes will exceed the expected capacity of a typical four-/five-lane arterial. (Extension of the north-to-east right-turn lane south from Novelty Hill Road to NE 95th Street will add significant capacity for northbound traffic as shown in Appendix H-4 of **Appendix H**. King County has an Interlocal agreement with the City of Redmond to improve this segment of roadway and the baseline King County CIP configuration includes improving this segment; however, specific improvements have not yet been defined by the County.)
- SR 520 Overpass at SR 202. Southbound AM peak hour volumes are projected to exceed capacity (v/c ratio of 1.08), and PM peak hour volumes are expected to approach capacity (v/c ratio of 0.96).

The following potential improvement for arterial capacity under the baseline condition/No Action Alternative is identified:

- Novelty Hill Road. Two travel lanes in each direction between Redmond Ridge Drive and 234th Avenue NE would improve capacity and increase traffic operations. The County is defining ultimate needs in the corridor based on 2028 traffic forecasts.

With SR 520 Improvements - Intersection Levels of Service. SR 520 improvements would have limited impact on baseline traffic volumes away from the interchange vicinity. Tables 10A and 10B of **Appendix H** show AM and PM peak hour levels of service with and without the SR 520 improvements, respectively, for the 10 study intersections closest to the interchange. Table 10C of **Appendix H** shows footnotes to Tables 10A and 10B; these footnotes identify potential improvements used in the LOS analyses. The SR 520 improvements would result in changes in LOS at five of the study intersections including improvements at two intersections; however, three additional intersections would degrade to LOS F, compared to the baseline condition without SR 520 improvements. The following additional intersections would operate at LOS F under the baseline condition/No Action Alternative with the SR 520 improvements:

- (#14) SR 520 Westbound/SR 202 Ramp (AM peak hour only).
- (#15) SR 520 Eastbound/SR 202 Ramp (AM peak hour only).
- (#17) Avondale Road/Union Hill Road (PM peak hour only). However, this intersection would no longer operate at LOS F during the AM peak hour, as compared to the baseline condition without SR 520 improvements.

With SR 520 Improvements – Roadway Traffic Operations. Changes in traffic volumes with the SR 520 improvements have limited effect on baseline roadway operations beyond the intersections described above. Arterials that would be over capacity under the 2010 baseline condition/No Action Alternative with SR 520 improvements are the same as under the baseline condition/No Action Alternative without SR 520 improvements.

SIGNIFICANT IMPACTS OF THE PROPOSED ACTIONS

The following section describes probable significant impacts of the Proposed Actions on the surrounding arterial network and other vicinity transportation systems. This section includes an analysis of the new trips that would be generated by the development of RRE and the Panhandle, distribution and assignment of the new trips, and analysis of impacts on levels of service at nearby significant intersections and roadways, public transportation impacts, non-motorized impacts, site access and safety issues.

The analysis of RRE transportation impacts assumes buildout of both RRE and the Panhandle with a total of 800 housing units on RRE and 22 on the Panhandle, as well as the proposed RRE recreation complex. The number of housing units is more than the 800 total which could be allowed (on both sites combined) under the BCCRP and as defined under the Proposed Actions (see **Chapter 2** for a complete description); as such, the transportation impact analysis for RRE provides a conservative analysis of impacts of the Proposed Actions together, and also serves as a conservative analysis of impacts if only RRE was developed. The Panhandle is analyzed separately to gauge impacts if only that project was developed.

Project Trip Generation

Table 34 summarizes weekday trip generation for the Proposed Actions and the two alternatives, showing trips for the proposed RRE and Panhandle projects separately. **Table 34a** summarizes weekend trip generation for the RRE Proposed Action (residences and recreation complex), as trip generation from the RRE recreation complex would be highest on weekends.

For the residential uses, trip generation was prepared using methods and data from *Trip Generation (ITE)*. Combined, the Proposed Actions would include a maximum of 800 total residential units on the RRE and Panhandle sites; however, to provide an assessment of the maximum potential impact of each development, the trip generation analyses for the Proposed

Action was based on 800 dwelling units on the RRE site and 22 units on the Panhandle. Additionally, the trip generation for the RRE UPD was based on 800 single-family detached dwelling units; however, under the Proposed Action, a portion of these units would actually be developed as multifamily units. Multifamily dwelling units typically generate traffic at a lower rate per unit than single-family dwellings; therefore, trip generation estimates are slightly higher than would actually be expected.

RRE and Panhandle Weekday Trip Generation

Weekday trip generation estimates for the proposed 10-field recreation complex were based on discussions with Lake Washington Youth Soccer Association (LWYSA) representatives and on previous analyses of traffic volumes at the existing Sixty Acres Soccer Complex in Redmond, which is programmed by LWYSA (see **Appendix H** for a complete discussion of trip generation estimates related to the proposed recreation complex). The residential portion of the Proposed Actions would generate more than 7,200 vehicle trips per day; 210 of these would be associated with the proposed maximum of 22 Panhandle lots and the rest with the RRE UPD. During the PM peak hour, approximately 880 trips would be generated by the combined residential and recreational uses (64 percent inbound and 36 percent outbound). The recreation complex would represent approximately 160 weekday PM peak hour trips, just less than 20 percent of

Table 34
RRE AND PANHANDLE WEEKDAY TRIP GENERATION FOR THE PROPOSED ACTIONS AND ALTERNATIVES

	Size (dwelling units or fields)	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
PROPOSED ACTIONS								
Redmond Ridge East								
Residential[1]	800[2]	7,020	142	427	569	447	252	699
Recreation Complex[3]	10	N/A[3]	—[3]	—[3]	—[3]	100	60	160
Redmond Ridge East Total		*7,020*[3]	*142*	*427*	*569*	*547*	*312*	*859*
Panhandle								
Residential[4]	22	210	4	13	17	14	8	22
Grand Total	***822+10 fields***	***7,230***	***146***	***440***	***586***	***561***	***320***	***881***
ALTERNATIVE 1								
Redmond Ridge East								
Residential[4]	67	640	13	37	50	44	24	68
Panhandle								
Residential[4]	24	230	5	13	18	15	9	24
Grand Total	***91***	***870***	***18***	***50***	***68***	***59***	***33***	***92***
ALTERNATIVE 2								
Redmond Ridge East								
Residential[4]	14	134	3	8	11	9	5	14
Panhandle								
Residential[4]	6	56	1	4	5	4	2	6
Grand Total	***20***	***190***	***4***	***12***	***16***	***13***	***7***	***20***

Source: The Transpo Group, 2004.

[1] For RRE Proposed Action the residential trip generation was calculated using the ITE trip equations.

[2] A total of 800 residential units are proposed for the RRE and Panhandle areas. Trip generation for each area is based on the maximum number of units that could be accommodated on the RRE or Panhandle areas to provide flexibility in site planning.

[3] PM peak hour trip generation based on analysis of traffic volumes from Sixty Acres and assuming use of four fields. AM peak hour generation on an average weekday is assumed to be negligible. Daily trip generation was not estimated for the recreation complex since data are not available.

[4] For Panhandle and other residential development alternatives, the ITE average trip generation rates were used.

TABLE 34a
RRE WEEKEND TRIP GENERATION FOR THE PROPOSED ACTION

Land Use	Size	In	Out	Total
Residential	800 du[1]	389	331	720
Recreation Complex	10 fields[2]	256	144	400
Total		**645**	**475**	**1,120**

Source: The Transpo Group, 2004.

1 Trip generation based on a maximum of 800 single-family dwelling units. Current plans call for up to 135 of the units to be multi-family. Trip generation based on ITE equations for single-family residential (land use code 210).

2 Trip rate derived from traffic count at the existing Sixty Acres soccer complex in Redmond and assumes all ten fields at RRE in use. Directional split based on Entranco study for NE 116th Street improvement project for King County and Redmond, conducted at Sixty Acres complex.

the total project-generated PM peak hour traffic. Some of the trips associated with the recreational complex would connect with RRE residential units, which are considered internal trips (see **Traffic Distribution and Assignment** below for a discussion of internalized trips). During the AM peak hour, the Proposed Actions would generate approximately 590 vehicle trips (75 percent would be outbound). The recreation complex would generate a negligible number of weekday AM peak hour trips.

RRE Weekend Trip Generation

Weekend trip generation estimates for RRE, summarized in **Table 34a,** reflect Saturday trip generation rates for residential uses, and assume 10 soccer fields in operation at the recreation complex. Because Saturday trip generation is higher than Sunday, and only 2 soccer fields would be constructed at the onset, these estimates are conservatively high. Trip generation rates for the recreation complex are based on actual traffic counts at the existing Sixty Acres soccer complex in Redmond during the Seattle Cup soccer tournament in July 2002, and on actual counts at Sixty Acres on a weekday evening in October 2002. The higher trip generation rate of the two actual counts (40 trips per field) was used for the RRE recreation complex, and the RRE analysis also assumes that both residential and recreation complex trips would peak during the same hour, ensuring a conservatively high analysis (see **Appendix H** for further discussion).

During the weekend, RRE residential uses would generate 720 trips during the peak hour (21 trips more than the weekday PM peak hour). The recreation complex would generate 400 trips during the highest hour (240 trips more than during the weekday PM peak hour). The RRE analysis assumes 64 percent of the recreation complex trips would be inbound and 36 percent would be outbound, based on the Sixty Acres counts.

Redmond Ridge East

On-site Roadways and Circulation

Figure 6 in **Chapter 2** shows the proposed access roads and circulation system for the RRE UPD. Primary access to RRE would be via extension of Eastridge Drive (238th Avenue NE) south from Novelty Hill Road through the Village at Redmond Ridge. A second access would

be provided via Muirwood Drive, which would connect to Trilogy Parkway (236th Avenue NE) just north of the Puget Sound Energy utility right-of-way. See **Chapter 2** and **Appendix H** for a complete description of proposed on-site roads and circulation. The final configuration of all on-site roadways would need approval from King County.

Traffic Distribution and Assignment

The model described under 2010 Baseline Conditions was used to distribute the RRE-generated traffic. The model distribution was based on buildout of the Redmond Ridge and Trilogy UPD's, including the business park and two retail centers. Some of the trips associated with RRE would connect with the future employment and retail centers, and some of the RRE residential-based trips would connect with the RRE recreation complex (internal trips). **Figure 28** summarizes the resulting PM peak hour trip distribution for the residential uses and recreation complex.

Approximately 20 percent of the RRE residential traffic during the weekday PM peak hour would connect within the UPDs, including the recreation complex, Redmond Ridge, and Trilogy: approximately 13 percent with the Redmond Ridge business park; another 3 to 4 percent with the retail centers within The Village and Redmond Ridge UPD; and, another 3 percent with the recreation complex. Table 11 in **Appendix H** summarizes the internalization of RRE residential traffic within the three UPDs.

Residential trip distribution would likely follow these general patterns, as shown in **Figure 28**:

- 47 percent via Novelty Hill Road west of the Redmond Ridge UPD (37 percent via Novelty Hill Road west of 208th Avenue NE, and 10 percent via 208th Avenue NE; at Union Hill Road,
  RRE traffic would split, with approximately 5 percent using Union Hill Road west of 208th Avenue NE and the remaining continuing south toward SR 202.)
- 12 percent (PM peak hour) via 238th Avenue NE (via Redmond Ridge Drive); (9 percent continuing south of Union Hill Road and 2 percent using Union Hill Road west of 238th Avenue NE.)
- 32 percent via Avondale Road south of Novelty Hill Road (PM peak hour). About two-thirds of that traffic would connect with SR 520 and about one-third would continue into or through Redmond.
- 14 percent via Trilogy Parkway (to connect with NE 133rd Street or other locations north of Novelty Hill Road. This route would be primarily used to access the I-405 corridor, Totem Lake, or Woodinville).
- 7 percent connecting to/from the east via Novelty Hill Road and West Snoqualmie Valley Road.

Weekday PM peak hour trips associated with the recreation complex would likely be distributed as follows:

- Nearly 45 percent (70 trips) would stay within RRE, Redmond Ridge UPD, or the Trilogy/ Village at Redmond Ridge UPD: almost 14 percent would connect with RRE residential units; 23 percent would connect with the 1,500 residential units in the Redmond Ridge UPD; and 7 percent would connect with the two retail centers along Novelty Hill Road. (These could include parents who drop their child off at practice and then go to the store before returning to pick up the player.)

Figure 28
Traffic Distribution—RRE

- 16 percent both east and west on Novelty Hill Road.
- 15 percent to areas south via Redmond Ridge Drive.
- Remainder via Trilogy Parkway and NE 133rd Street.

No AM weekday peak hour trips would be associated with the recreation complex.

While the recreation complex would generate significantly more traffic during the weekend peak hour, the number of trips connecting to the other UPDs is estimated to be similar to that expected during the weekday PM peak hour. However, a higher percentage of trips would be between the recreation complex and areas outside of the UPDs on weekends. This is due to more use of the recreation complex for games rather than practices. At the direction of King County, weekend trips were analyzed to evaluate on-site traffic operations; therefore, only the distribution of weekend trips within the three UPDs was analyzed. Weekend peak hour trips associated with the recreation complex would likely be distributed as follows:

- Nearly 17.5 percent (70 trips) would stay within RRE, Redmond Ridge UPD, or the Trilogy/ Village at Redmond Ridge UPD: nearly 6 percent would connect with RRE residential units; over 9 percent would connect with the 1,500 residential units in the Redmond Ridge UPD; and nearly 3 percent would connect with the two retail centers along Novelty Hill Road. (These could include parents who drop their child off at practice and then go to the store before returning to pick up the player.)
- The remaining 82.5 percent outside of the three UPDs.

Tables 13A and 13B in **Appendix H** identify the various trip connections between the recreation complex and the UPDs for weekday and weekend peak hours, respectively.

King County Intersection Standard Threshold

Table 12 in **Appendix H** summarizes the RRE PM peak hour project traffic volumes at the study intersections. All study intersections along Novelty Hill Road west of Eastridge Drive or along Avondale Road between Novelty Hill and Union Hill Roads would meet the 20 percent threshold for application of King County's Intersection Standard (IS). Intersections meeting this threshold could be subject to mitigation if they operate at LOS F both under baseline conditions and with traffic resulting from the RRE Proposed Action. (The IS requires intersections that meet the threshold and operate at a calculated LOS F under baseline conditions, or that would degrade to LOS F with project traffic, to be returned to their pre-project condition, or improved to LOS E, respectively. Under the IS, mitigation could also be required where King County determines that a hazard to safety could reasonably result due to the impacts from the RRE Proposed Action, even though the traffic volume thresholds would not be met.) The intersections of Muirwood Drive with Trilogy Parkway and Eastridge Drive would also meet the criterion. (The Village Retail Access driveway is a private driveway, and therefore would not be regulated by the King County Intersection Standards.) **Figure 29** shows the assignment of RRE project AM and PM peak hour traffic at study intersections.

Figure 29
AM and PM Peak Hour Project Traffic—2010 RRE

Figure 29 cont'd

Effect of Redmond Ridge Business Park. The above traffic distributions and assignments assume buildout of the 1.2-million-square-foot business park on the approved Redmond Ridge UPD site. At the direction of King County, the potential effects of the business park not building out were also discussed. If the business park was not fully developed within the 2010 horizon year, some of the trips associated with the RRE residential uses would not have connections within the UPD.

The base residential trip distribution has 90 of the 699 PM peak hour residential trips connecting with the business park. Approximately two-thirds of the 90 PM peak hour trips would be inbound to RRE. During the AM peak hour, 50 project trips were forecast to connect between the business park and RRE. Without the RRE business park, the 90 PM peak hour trips would follow the general traffic distribution patterns for the residential uses shown in **Figure 28**.

These additions would not change the intersections meeting the 20-percent threshold per King County's IS, and the increase in project-related trips within the study area would be more than offset by the elimination of traffic to/from the business park. The reduced total volumes without the business park would typically result in better traffic operations than the condition with the business park. This would lead to either similar or reduced needs for roadway or intersection improvements within the study area.

Traffic Forecasts

Traffic forecasts for RRE were developed by adding project traffic to the 2010 baseline condition/No Action Alternative forecast. As discussed above, the RRE forecasts include trips that would be generated by the Panhandle under the Proposed Actions. Forecasts are provided for the Proposed Actions both without and with SR 520 improvements which may or may not be completed by the 2010 buildout/analysis year, as discussed under 2010 Baseline Conditions in the Affected Environment portion of this analysis, above.

Without SR 520 Improvements. **Figure 30** summarizes the 2010 Proposed Actions' daily traffic forecasts without the SR 520/SR 202 improvements, and **Figure 31** summarizes AM and PM peak hour traffic forecasts for RRE without the SR 520/SR 202 improvements. As with the baseline condition/No Action Alternative, the AM and PM peak hour forecasts were used in the operations analyses and to determine consistency with King County's Intersection Standards (LOS E).

The largest increases in peak hour traffic for RRE compared to the baseline condition/No Action Alternative would be on Trilogy Parkway and Eastridge Drive, south of Novelty Hill Road. These two roads would serve all of the access to/from RRE. Traffic volumes on Novelty Hill Road between Eastridge and Redmond Ridge Drives would also increase over the 2010 baseline condition/No Action Alternative. For example, AM peak hour volumes in the westbound direction approaching Redmond Ridge Drive would increase from 1,980 to 2,150 vph. During the PM peak hour, eastbound volumes on the same road segment would be 2,060 vph compared to 1,885 vph under the baseline condition/No Action Alternative.

Further from the sites, the difference in peak hour traffic volumes between the Proposed Actions and baseline condition/No Action Alternative would be much lower. This reflects the dispersion

Figure 30
Daily Traffic Forecast—2010 RRE

Figure 31
AM and PM Peak Hour Traffic Forecast—2010 RRE

Figure 31 cont'd

of project traffic to multiple routes, as well as the redistribution and/or diversion of traffic from a corridor with the addition of the projects. (See **Appendix H** for a discussion of traffic volumes on other study area roads and intersections).

With SR 520/SR 202 Improvements. Under RRE in 2010, the construction of the SR 520 nickel gas tax package improvements would result in similar shifts of traffic to those described for the 2010 baseline condition/No Action Alternative. Traffic is projected to shift to SR 202 between the interchange and East Lake Sammamish Parkway, with a reduction in traffic on Union Hill Road. The order of magnitude of the shifts are similar for the 2010 baseline condition/No Action Alternative and for RRE.

Traffic Operations

Traffic operations analyses for RRE were conducted using the same methods and assumptions used for the 2010 baseline condition/No Action Alternative. As with the baseline condition/No Action Alternative, the primary analysis did not include the construction of the SR 520/SR 202 interchange improvements; however, an evaluation of impacts with the SR 520 interchange improvements was also provided.

Without SR 520 Improvements - Intersection Levels of Service. **Tables 35** and **36** summarize the AM and PM peak hour levels of service for the RRE Proposed Action. The levels of service presented in these tables do not include the additional improvements identified to resolve the LOS F conditions under the 2010 baseline condition/No Action Alternative; however, the tables do assume completion of funded transportation improvement projects listed under Programmed Roadway Improvements in the Affected Environment section (except SR 520 improvements). **Table 36a** shows footnotes referenced in **Tables 34** and **36**, including those identifying specific programmed improvements assumed at each intersection in conducting the LOS analyses. This section identifies intersections that would decline to LOS F as a result of RRE as compared to the baseline condition/No Action Alternative. All other intersections would remain at LOS E or better, or would operate at LOS F under the baseline condition/No Action Alternative.

Two off-site intersections would degrade to LOS F under RRE, as compared to the 2010 baseline condition/No Action Alternative:

- (#7) Novelty Hill Road/Redmond Ridge Drive (PM peak hour only). If improvements identified under the baseline condition/No Action Alternative are implemented, LOS D with RRE would result.
- (#8) Novelty Hill Road/234th Avenue NE (PM peak hour only). Under baseline conditions, this intersection would operate at LOS F during the AM peak hour; however, the LOS F condition would affect fewer than five vehicles during both peak hours. A signal would not be warranted. Restricting the southbound approach to right turns only would resolve LOS F conditions.

Only one site access intersection would operate at LOS F under RRE, as compared to the 2010 baseline condition/No Action Alternative:

- (#10) Novelty Hill Road/Eastridge Drive (AM peak hour only). With signal and striping modification, the intersection would operate at LOS E during the AM peak hour and LOS C during the PM peak hour.

Table 35
LEVEL OF SERVICE – 2010 BASELINE CONDITION AND RRE, AM PEAK HOUR

Int ID[1]	Location	Intersection Control	No Action			Action		
			LOS[2]	Delay[3]	V/C or WM[4]	LOS	Delay	V/C or WM
1	Avondale Rd/NE 95th St	Signalized	D[8]	52.4	1.04	D[8]	50.5	1.04
2	Novelty Hill Rd/Avondale Rd	Signalized	D[9]	54.6	0.88	D[9]	53.9	0.90
3	Novelty Hill Rd/Redmond Rd	TWSC[5]	F[10]	>150.0	SB	F[10]	>150.0	SB
4	Novelty Hill Rd/208th Ave NE	Signalized	C[13]	27.9	0.83	C[13]	26.8	0.85
5	Novelty Hill Rd/Cedar Park Crescent	Signalized	D[14]	48.0	0.99	E[14]	62.8	1.05
6	Novelty Hill Rd/Redmond Ridge Retail Access	TWSC	F[16]	>150.0	NBL	F[16]	>150.0	NBL
7	Novelty Hill Rd/Redmond Ridge Dr	Signalized	C[19]	27.2	0.93	C[19]	27.7	0.92
8	Novelty Hill Rd/234th Ave NE	TWSC	F[21]	>150.0	SB	F[21]	>150.0	SB
9	Novelty Hill Rd/Trilogy Pkwy	Signalized	D[23]	35.4	0.89	D[23]	36.9	0.92
10	Novelty Hill Rd/Eastridge Drive	Signalized	D[24]	54.0	0.96	F[24]	105.9	1.09
11	Novelty Hill Rd/243rd Ave NE	TWSC	F[6]	53.5	NB	F[6]	55.7	NB
12	Novelty Hill Rd/W Snoqualmie Valley Rd	Signalized	D[29]	53.1	1.01	D[29]	48.7	0.99
13	NE 124th St/W Snoqualmie Valley Rd	Signalized	E[30]	57.7	0.99	D[30]	54.6	0.98
14	SR 520 Westbound/SR 202	Signalized	D[6]	49.3	0.86	D[6]	49.3	0.86
15	SR 520 Eastbound/SR 202	Signalized	E[6]	72.4	0.86	E[6]	76.0	0.86
16	Avondale Wy/Union Hill Rd	Signalized	B[6]	12.8	0.63	B[6]	12.5	0.65
17	Avondale Rd/Union Hill Rd	Signalized	F[31]	85.8	1.04	F[31]	88.6	1.06
18	Union Hill Rd/208th Ave NE	Signalized	E[6]	68.9	0.99	E[6]	73.1	1.00
19	NE 80th St/255th Ave NE	TWSC	A[6]	8.5	SB	A[6]	8.6	SB
20	NE 80th St/Redmond Ridge Dr	TWSC	C[6]	20.5	WB	C[6]	24.6	WB
21	Union Hill Rd/238th Ave NE (North)	Signalized	B[32]	14.8	0.69	B[32]	16.2	0.72
22	Union Hill Rd/238th Ave NE (South)	TWSC	F[6]	96.0	WB	F[6]	122.4	WB
23	SR 202/236th Ave NE	Signalized	F[6]	80.4	1.04	F[6]	88.6	1.05
24	SR 202/Sahalee Wy NE	Signalized	D[36]	54.7	0.96	D[36]	52.7	0.95
25	SR 202/204th Pl NE	Signalized	D[37]	48.4	1.02	D[37]	50.8	1.03
26	NE 133rd St/218th Ave NE	TWSC	E[6]	35.6	NB	E[6]	40.6	NB
27	NE 133rd St/232nd Ave NE	TWSC	D[38]	34.8	SB	E[38]	37.2	SB
28	NE 142nd Pl/232nd Ave NE	TWSC	B[6]	13.4	WB	B[6]	13.7	WB
29	Muirwood Dr/Trilogy Pkwy	TWSC	A[7]	9.2	EB	B[7]	10.5	EB
30	Muirwood Dr/Eastridge Dr	TWSC	A[7]	9.0	EB	B[7]	12.2	EB
31	Village Retail Access/Trilogy Pkwy	TWSC	B[7]	10.6	EBL	B[7]	12.9	EBL

Source: The Transpo Group, 2004.
Footnotes are described in Table 36a.

Table 36
LEVEL OF SERVICE – 2010 BASELINE CONDITION AND RRE, PM PEAK HOUR

Int ID[1]	Location	Intersection Control	No Action			Action		
			LOS[2]	Delay[3]	V/C or WM[4]	LOS	Delay	V/C or WM
1	Avondale Rd/NE 95th St	Signalized	C[8]	33.2	0.90	C[8]	33.4	0.90
2	Novelty Hill Rd/Avondale Rd	Signalized	E[9]	60.8	1.06	E[9]	61.3	1.05
3	Novelty Hill Rd/Redmond Rd	TWSC[5]	D[10]	31.8	SB	D[10]	33.3	SB
4	Novelty Hill Rd/208th Ave NE	Signalized	D[13]	44.9	0.99	D[13]	47.1	1.01
5	Novelty Hill Rd/Cedar Park Crescent	Signalized	C[14]	21.3	0.79	B[14]	18.5	0.78
6	Novelty Hill Rd/Redmond Ridge Retail Access	TWSC	F[16]	>150.0	NBL	F[16]	>150.0	NBL
7	Novelty Hill Rd/Redmond Ridge Dr	Signalized	E[19]	72.0	1.10	F[19]	95.5	1.19
8	Novelty Hill Rd/234th Ave NE	TWSC	E[21]	48.9	SB	F[21]	80.5	SB
9	Novelty Hill Rd/Trilogy Pkwy	Signalized	C[23]	30.2	0.92	D[23]	43.6	1.05
10	Novelty Hill Rd/Eastridge Drive	Signalized	C[24]	28.8	0.83	D[24]	45.1	0.97
11	Novelty Hill Rd/243rd Ave NE	TWSC	F[6]	>150.0	NB	F[6]	>150.0	NB
12	Novelty Hill Rd/W Snoqualmie Valley Rd	Signalized	D[29]	49.9	0.96	D[29]	49.4	0.95
13	NE 124th St/W Snoqualmie Valley Rd	Signalized	C[30]	24.2	0.71	C[30]	23.7	0.70
14	SR 520 Westbound/SR 202	Signalized	E[6]	68.2	0.97	E[6]	67.7	0.97
15	SR 520 Eastbound/SR 202	Signalized	D[6]	53.0	1.03	D[6]	53.5	1.04
16	Avondale Wy/Union Hill Rd	Signalized	B[6]	19.1	0.81	B[6]	18.7	0.81
17	Avondale Rd/Union Hill Rd	Signalized	E[31]	78.7	1.10	E[31]	77.6	1.10
18	Union Hill Rd/208th Ave NE	Signalized	D[6]	38.8	0.84	D[6]	37.9	0.82
19	NE 80th St/255th Ave NE	TWSC	A[6]	8.4	SB	A[6]	8.5	SB
20	NE 80th St/Redmond Ridge Dr	TWSC	C[6]	21.1	WB	D[6]	25.1	WB
21	Union Hill Rd/238th Ave NE (North)	Signalized	B[32]	15.2	0.65	B[32]	16.1	0.68
22	Union Hill Rd/238th Ave NE (South)	TWSC	F[6]	>150.0	WB	F[6]	>150.0	WB
23	SR 202/236th Ave NE	Signalized	E[6]	60.7	0.82	E[6]	64.3	0.85
24	SR 202/Sahalee Wy NE	Signalized	D[36]	50.9	0.96	D[36]	50.7	0.96
25	SR 202/204th Pl NE	Signalized	C[37]	20.6	0.81	C[37]	20.9	0.81
26	NE 133rd St/218th Ave NE	TWSC	D[6]	31.1	SB	E[6]	39.2	SB
27	NE 133rd St/232nd Ave NE	TWSC	C[38]	18.1	SB	C[38]	20.3	SB
28	NE 142nd Pl/232nd Ave NE	TWSC	B[6]	12.0	EB	B[6]	11.6	EB
29	Muirwood Dr/Trilogy Pkwy	TWSC	A[7]	9.4	EB	B[7]	11.4	EB
30	Muirwood Dr/Eastridge Dr	TWSC	A[7]	9.4	EB	B[7]	14.0	EB
31	Village Retail Access/Trilogy Pkwy	TWSC	C[7]	17.4	EBL	E[7]	42.4	EBL

Source: The Transpo Group, 2004.
Footnotes are described in Table 36a.

Table 36a
FOOTNOTES FOR TABLES 35 AND 36

1. Intersection number corresponds to Figure 26, intersections are sorted by corridor.
2. Level of service, based on 2000 HCM methodology.
3. Average control delay in seconds per vehicle.
4. Volume-to-capacity ratio for signalized intersections or worst movement for stop controlled intersections.
5. Two-way Stop Controlled Intersection.
6. Intersection geometry/control unchanged from existing conditions.
7. New Intersection for 2010. Constructed as part of the Village at Redmond Ridge.
8. Assumes City of Redmond CIP project #S18/KC CIP project #100901. Construct additional northbound lane to accommodate right-turns at the intersection of Avondale Road/Novelty Hill Road.
9. Assumes City of Redmond CIP project #S18/KC CIP project #100901. Widen Novelty Hill Road to five lanes to allow two eastbound lanes and a free northbound right-turn movement. Also, construct exclusive westbound right-turn lane.
10. Assumes KC CIP project #100992. Constructs one additional through lane in each direction on Novelty Hill Road through the intersection.
13. Assumes KC CIP project #100992. Constructs one additional through lane in each direction on Novelty Hill Road through the intersection.
14. Eastbound curb lane converted from right-turn only to through/right-turn lane. Left turns from Novelty Hill Road has protected signal phasing.
16. Northbound approach to intersection opened to serve Redmond Ridge Retail Center.
19. Existing geometry unchanged, westbound left-turns have protected signal phasing.
21. Open northbound approach and west-to-south left-turn lane to serve Village Retail Center.
23. Traffic signal activated, and northbound approach to intersection opened.
24. Traffic signal installed per Trilogy UPD permit.
29. Assumes installation of traffic signal proposed in KC CIP project #200301 and condition of Redmond Ridge and Trilogy UPD permits.
30. Assumes KC CIP project #201101. Exclusive northbound right-turn and southbound left-turn lanes constructed.
31. Assumes City of Redmond CIP project #C14. Addition of exclusive northbound right-turn lane, second southbound left-turn lane constructed, third eastbound through lane, and exclusive turn-lanes on westbound approach.
32. Assumes KC CIP project #101101. Signal installed and exclusive northbound left-turn lane constructed.
36. Assumes KC CIP project #200997 and WSDOT Sunshine Report project #W-1. Turn lanes on all approaches and second WB through lane constructed; north-to-west left-turns allowed from two lanes.
37. Assumes WSDOT Sunshine Report project #W-1. Adds second through lane in both directions.
38. Adds exclusive eastbound left-turn lane and exclusive westbound right-turn lane on Trilogy UPD site.
Note: The footnote numbers for each intersection are the same as those in **Table 33a** to maintain consistency. The following footnote numbers were not used in **Tables 35** and **36** for the 2010 Action analysis; 11-12, 15, 17-18, 20, 22, 25-28, 33-35, and 39-40.

Additional LOS changes would result at some study intersections; however, these would not result in LOS F conditions. For details, see **Appendix H**.

Tables 37 and **38** show the resulting intersection levels of service with additional improvements that could resolve baseline LOS F conditions and those listed above to provide LOS E or better with RRE. **Table 38a** shows footnotes referenced in **Tables 37** and **38**, including those identifying specific improvements assumed at each intersection in conducting the LOS analyses; these additional identified improvements are not currently funded. They were identified as part of this analysis to provide information regarding the type of improvements needed to resolve operations issues that would result under RRE.

Table 37
LEVEL OF SERVICE – 2010 RRE AM PEAK HOUR WITH IMPROVEMENTS*

Int ID[1]	Location	Intersection Control	Action			With improvements**		
			LOS[2]	Delay[3]	V/C or WM[4]	LOS	Delay	V/C or WM
1	Avondale Rd/NE 95th St	Signalized	D[8]	50.5	1.04			
2	Novelty Hill Rd/Avondale Rd	Signalized	D[9]	53.9	0.90			
3	Novelty Hill Rd/Redmond Rd	TWSC[5]	F[10]	>150.0	SB	F[11] C[12]	>150.0 30.2	SBL 0.91
4	Novelty Hill Rd/208th Ave NE	Signalized	C[13]	26.8	0.85			
5	Novelty Hill Rd/Cedar Park Crescent	Signalized	E[14]	62.8	1.05	C[15]	28.6	0.89
6	Novelty Hill Rd/Redmond Ridge Retail Access	TWSC	F[16]	>150.0	NBL	F[41] F[17] B[18]	>150.0 60.9 14.7	SB NBL SBR
7	Novelty Hill Rd/Redmond Ridge Dr	Signalized	C[19]	27.7	0.92	C[20]	25.3	0.95
8	Novelty Hill Rd/234th Ave NE	TWSC	F[21]	>150.0	SB	E[22]	45.1	EBL
9	Novelty Hill Rd/Trilogy Pkwy	Signalized	D[23]	36.9	0.92			
10	Novelty Hill Rd/Eastridge Drive	Signalized	F[24]	105.9	1.09	E[25]	63.8	1.01
11	Novelty Hill Rd/243rd Ave NE	TWSC	F[6]	55.7	NB	D[26] B[27] A[28]	28.9 10.9 10.0	NB 0.83 0.18
12	Novelty Hill Rd/W Snoqualmie Valley Rd	Signalized	D[29]	48.7	0.99			
13	NE 124th St/W Snoqualmie Valley Rd	Signalized	D[30]	54.6	0.98			
14	SR 520 Westbound/SR 202	Signalized	D[6]	49.3	0.86			
15	SR 520 Eastbound/SR 202	Signalized	E[6]	76.0	0.86			
16	Avondale Wy/Union Hill Rd	Signalized	B[6]	12.5	0.65			
17	Avondale Rd/Union Hill Rd	Signalized	F[31]	88.6	1.06			
18	Union Hill Rd/208th Ave NE	Signalized	E[6]	73.1	1.00			
19	NE 80th St/255th Ave NE	TWSC	A[6]	8.6	SB			
20	NE 80th St/Redmond Ridge Dr	TWSC	C[6]	24.6	WB			
21	Union Hill Rd/238th Ave NE (North)	Signalized	B[32]	16.2	0.72			
22	Union Hill Rd/238th Ave NE (South)	TWSC	F[6]	122.4	WB	C[33] C[34]	22.7 34.6	WBR 0.86
23	SR 202/236th Ave NE	Signalized	F[6]	88.6	1.05	E[35]	58.4	0.84
24	SR 202/Sahalee Wy NE	Signalized	D[36]	52.7	0.95			
25	SR 202/204th Pl NE	Signalized	D[37]	50.8	1.03			
26	NE 133rd St/218th Ave NE	TWSC	E[6]	40.6	NB			
27	NE 133rd St/232nd Ave NE	TWSC	E[38]	37.2	SB			
28	NE 142nd Pl/232nd Ave NE	TWSC	B[6]	13.7	WB			
29	Muirwood Dr/Trilogy Pkwy	TWSC	B[7]	10.5	EB			
30	Muirwood Dr/Eastridge Dr	TWSC	B[7]	12.2	EB			
31	Village Retail Access/Trilogy Pkwy	TWSC	B[7]	12.9	EBL			

Source: The Transpo Group, 2004.

* Footnotes are described in Table 38a.

** A blank cell indicates that additional improvement have not been identified. Therefore, the LOS and delay values in the columns to the left would be the result.

Table 38
LEVEL OF SERVICE – 2010 RRE PM PEAK HOUR WITH IMPROVEMENTS*

Int ID[1]	Location	Intersection Control	Action			With improvements**		
			LOS[2]	Delay[3]	V/C or WM[4]	LOS	Delay	V/C or WM
1	Avondale Rd/NE 95th St	Signalized	C[8]	33.4	0.90			
2	Novelty Hill Rd/Avondale Rd	Signalized	E[9]	61.3	1.05			
3	Novelty Hill Rd/Redmond Rd	TWSC[5]	D[10]	33.3	SB	C[11] B[12]	21.2 16.4	SBL 0.91
4	Novelty Hill Rd/208th Ave NE	Signalized	D[13]	47.1	1.01			
5	Novelty Hill Rd/Cedar Park Crescent	Signalized	B[14]	18.5	0.78	B[15]	17.8	0.78
6	Novelty Hill Rd/Redmond Ridge Retail Access	TWSC	F[16]	>150.0	NBL	C[41] F[17] C[18]	24.5 >150.0 17.1	SB NBL NBR
7	Novelty Hill Rd/Redmond Ridge Dr	Signalized	F[19]	95.5	1.19	D[20]	48.5	1.02
8	Novelty Hill Rd/234th Ave NE	TWSC	F[21]	80.5	SB	D[22]	33.6	WBL
9	Novelty Hill Rd/Trilogy Pkwy	Signalized	D[23]	43.6	1.05			
10	Novelty Hill Rd/Eastridge Drive	Signalized	D[24]	45.1	0.97	C[25]	28.1	0.92
11	Novelty Hill Rd/243rd Ave NE	TWSC	F[6]	>150.0	NB	F[26] A[27] A[28]	99.5 3.8 4.4	NB 0.71 0.71
12	Novelty Hill Rd/W Snoqualmie Valley Rd	Signalized	D[29]	49.4	0.95			
13	NE 124th St/W Snoqualmie Valley Rd	Signalized	C[30]	23.7	0.70			
14	SR 520 Westbound/SR 202	Signalized	E[6]	67.7	0.97			
15	SR 520 Eastbound/SR 202	Signalized	D[6]	53.5	1.04			
16	Avondale Wy/Union Hill Rd	Signalized	B[6]	18.7	0.81			
17	Avondale Rd/Union Hill Rd	Signalized	E[31]	77.6	1.10			
18	Union Hill Rd/208th Ave NE	Signalized	D[6]	37.9	0.82			
19	NE 80th St/255th Ave NE	TWSC	A[6]	8.5	SB			
20	NE 80th St/Redmond Ridge Dr	TWSC	D[6]	25.1	WB			
21	Union Hill Rd/238th Ave NE (North)	Signalized	B[32]	16.1	0.68			
22	Union Hill Rd/238th Ave NE (South)	TWSC	F[6]	>150.0	WB	E[33] C[34]	42.9 23.3	WBL 0.94
23	SR 202/236th Ave NE	Signalized	E[6]	64.3	0.85	D[35]	38.5	0.76
24	SR 202/Sahalee Wy NE	Signalized	D[36]	50.7	0.96			
25	SR 202/204th Pl NE	Signalized	C[37]	20.9	0.81			
26	NE 133rd St/218th Ave NE	TWSC	E[6]	39.2	SB			
27	NE 133rd St/232nd Ave NE	TWSC	C[38]	20.3	SB			
28	NE 142nd Pl/232nd Ave NE	TWSC	B[6]	11.6	EB			
29	Muirwood Dr/Trilogy Pkwy	TWSC	B[7]	11.4	EB			
30	Muirwood Dr/Eastridge Dr	TWSC	B[7]	14.0	EB			
31	Village Retail Access/Trilogy Pkwy	TWSC	E[7]	42.4	EBL			

* Footnotes are described in Table 38a
** A blank cell indicates that additional improvement have not been identified. Therefore, the LOS and delay values in the columns to the left would be the result.

Source: The Transpo Group, 2004.

* Footnotes are described in Table 38a.

** A blank cell indicates that additional improvement have not been identified. Therefore, the LOS and delay values in the columns to the left would be the result.

Table 38a
FOOTNOTES FOR TABLE 37 AND 38

1. Intersection number corresponds to Figure 3, intersections are sorted by corridor.
2. Level of service, based on 2000 HCM methodology.
3. Average control delay in seconds per vehicle.
4. Volume-to-capacity ratio for signalized intersections or worst movement for stop controlled intersections.
5. Two-way Stop Controlled Intersection.
6. Intersection geometry/control unchanged from existing conditions.
7. New Intersection for 2010. Constructed as part of the Village at Redmond Ridge.
8. Assumes City of Redmond CIP project #S18/KC CIP project #100901. Construct additional northbound lane to accommodate right-turns at the intersection of Avondale Road/Novelty Hill Road.
9. Assumes City of Redmond CIP project #S18/KC CIP project #100901. Widen Novelty Hill Road to five lanes to allow two eastbound lanes and a free northbound right-turn movement. Also, construct exclusive westbound right-turn lane.
10. Assumes KC CIP project #100992. Constructs one additional through lane in each direction on Novelty Hill Road through the intersection.
11. Adds exclusive southbound turn lanes in addition to KC CIP project #100992. (See footnote 10).
12. Assumes traffic signal in addition to KC CIP project #100992. (See footnote 10).
13. Assumes KC CIP project #100992. Constructs one additional through lane in each direction on Novelty Hill Road through the intersection.
14. Eastbound curb lane converted from right-turn only to through/right-turn lane. Left turns from Novelty Hill Road have protected signal phasing.
15. Novelty Hill Road, from Cedar Park Crescent to 234th Avenue NE widened to four/five lanes.
16. Northbound approach to intersection opened to serve Redmond Ridge Retail Center.
17. Novelty Hill Road, from Cedar Park Crescent to 234th Avenue NE widened to four/five lanes.
18. Novelty Hill Road, from Cedar Park Crescent to 234th Avenue NE widened to four/five lanes. Also northbound and southbound approaches restricted to allow only right-turn egress only (full ingress maintained).
19. Existing geometry unchanged, westbound left-turns have protected signal phasing.
20. Novelty Hill Road, from Cedar Park Crescent to 234th Avenue NE widened to four/five lanes (improvement of this section of Novelty Hill Road was not assumed as part of the County's CIP project).
21. Open northbound approach to intersection and west-to-south left-turn lane to serve Village Retail Center.
22. Southbound approach restricted to allow right-turn egress only (full ingress maintained).
23. Traffic signal activated, and northbound approach to intersection opened.
24. Traffic signal installed per Trilogy UPD permit.
25. Northbound approach modified to allow left-turns from both lanes. Northbound/southbound approaches run with split phasing.
26. Adds exclusive westbound left-turn lane and two-stage gap acceptance for northbound left turns.
27. Existing geometry unchanged, assumes traffic signal installed.
28. Assumes traffic signal installed, westbound left-turn lane constructed and geometry revised to allow free flow westbound through movement.
29. Assumes installation of traffic signal proposed in KC CIP project #200301 and condition of the Redmond Ridge and Trilogy UPD permits.
30. Assumes KC CIP project #201101. Exclusive northbound right-turn and southbound left-turn lanes constructed.
31. Assumes City of Redmond CIP project #C14. Addition of exclusive northbound right-turn lane, second southbound left-turn lane constructed, third eastbound through lane, and exclusive turn-lanes on westbound approach.
32. Assumes KC CIP project #101101. Signal installed and exclusive northbound left-turn lane constructed.
33. Adds exclusive westbound turn lanes, a southbound left-turn lane, and two-stage gap acceptance for westbound left turns.
34. Existing geometry unchanged, assumes traffic signal installed.
35. Adds exclusive westbound right-turn lane.
36. Assumes KC CIP project #200997 and WSDOT Sunshine Report project #W-1. Turn lanes on all approaches and second WB through lane constructed; north-to-west left turns allowed from two-lanes.
37. Assumes WSDOT Sunshine Report project #W-1. Adds second through lane in both directions.
38. Adds exclusive eastbound left-turn lane and exclusive westbound right-turn lane on Trilogy UPD site.
41. Assumes restriction of Redmond Ridge retail access (south leg) to right-in/right-out movements. Also assumes provision of a south-to-east left-turn acceleration/merge lane and two-stage gap acceptance for that movement.

Note: The footnote numbers for each intersection are the same as those in Table 33a to maintain consistency. The following footnotes numbers are not used in Tables 37 and 38 for the 2010 Action analysis; 39-40.

The following intersections would operate at LOS F under the baseline condition/No Action Alternative, and would meet King County's IS threshold of 30 or more trips from a development in one hour, and at least 20 percent of the new traffic generated by RRE within that hour:

- (#3) Novelty Hill Road/Redmond Road (AM peak hour only)
- (#6) Novelty Hill Road/Redmond Ridge Retail Access
- (#8) Novelty Hill Road/234th Avenue NE (AM peak hour only)
- (#17) Avondale Road/Union Hill Road (AM peak hour only).

Appendix H includes a complete discussion of site-access and off-site intersections and possible modifications to improve LOS at these locations.

Without SR 520 Improvements – Roadway Traffic Operations. Arterial segments that would exceed capacity as a result of the RRE Proposed Action, as compared to the 2010 baseline condition/No Action Alternative, are shown below. Key off-site arterials are presented first, followed by a discussion of on-site neighborhood collectors and subcollector roadways. See **Appendix H** for a complete discussion of roadway traffic volumes and capacity under RRE.

The following off-site roadways would experience increased capacity issues as a result of RRE:

- Avondale Road. AM peak hour traffic volumes in the southbound direction would be 2.2 percent higher than the baseline condition/No Action Alternative (under the baseline/No Action condition the road would be over capacity). The previously described City of Redmond planned improvements will add capacity to key intersections in the Avondale Road corridor. The City of Redmond's Transportation Facilities Plan (TFP) does not include improvements that would widen Avondale Road to six or seven lanes. The City's TFP does include extensions of 185th and 188th Avenues NE in southeast Redmond that would improve capacity and circulation in that subarea of the City. In addition, the City's TFP calls for extending 160th Avenue NE north of City Hall to connect with SR 202. From the new connection with 160th Avenue NE to NE 124th Street, SR 202 would be widened to five lanes. This new corridor would serve north-south travel in and through Redmond and would draw traffic from the overcapacity Avondale Road corridor.
- SR 520 Overpass at SR 202. AM peak hour volumes in the southbound direction would be approximately 10 percent greater than the 2,250-vph capacity, a slight increase over the baseline condition of 1.08 v/c ratio. PM peak hour volumes would approach capacity (v/c ratio of 0.97), a slight increase over baseline conditions of 0.96 v/c ratio.

All on-site roadways would have adequate capacity for projected traffic volumes.

Queuing impacts would be expected at the following intersections as a result of RRE. No queuing impacts are forecast under the baseline condition/No Action Alternative at these intersections. The discussion of queuing impacts at these intersections includes identification of improvements to resolve these impacts.

(#9) Novelty Hill Road/Trilogy Parkway. Under RRE, northbound left-turn movements would exceed the 200-foot-long storage lane during the AM and PM peak hour during some of the signal cycles. The longest expected queue for the majority of the time (95th-percentile queue) for the north-to-west left-turn movement is estimated at 265 feet during the AM peak hour and 350 feet during the PM peak hour. During the AM peak hour, adequate storage to accommodate the excess left-turn queue would be available in the northbound through lane without blocking the Village Retail access driveway. During the PM peak hour, the northbound through lane

would not be able to accommodate fully any spillover traffic queue without potentially blocking the Village Retail drive on some signal cycles. In order to reduce the impact of the potential traffic queues, the left-turn lane could be lengthened by modifying the planter strip. The modification could extend the left-turn lane back to the Village Retail access driveway. This queue could still potentially block the retail access intersection for 5 to 10 percent of the signal cycles during the PM peak hour.

As previously noted, the trip generation for the existing Redmond Ridge UPD residential units is substantially lower than estimated using ITE *Trip Generation*. If a lower trip generation also results for RRE, the potential impacts of the traffic queues could be greatly reduced. (It should be noted that as the Redmond Ridge community "matures" and the characteristics of residents change to a more typical population mix [families with driving age children, empty nesters, etc.] the actual trip generation rate may change.) Alternatively, shifting traffic from northbound Trilogy Parkway to Eastridge Drive could reduce the potential blocking of the retail access drive.

(#10) Novelty Hill Road/Eastridge Drive. With RRE, this intersection would operate at LOS F during the AM peak hour, a degradation from LOS D under the 2010 No Action Alternative. The decline in LOS is due to the high volume of north-to-west left turns exiting RRE. The analysis was based on the northbound approach consisting of a left-turn lane and a shared through/right lane. Changing the through/right lane to a shared left/through/right lane would provide two lanes for the high volume left turns. This would require modifying the signal and striping, but would not require widening the approach roadway. With this modification, the intersection would operate at LOS E during the AM peak hour and LOS C during the PM peak hour. The longest expected queues for the majority of the time (95th-percentile queue) during the AM peak hour for the northbound approach would require approximately 350 feet of storage south of Novelty Hill Road. This can be accommodated with the current design of Eastridge Drive. The resulting queue would not have an impact on driveways or intersections along Eastridge Drive. The first driveway south of Novelty Hill Road is located approximately 350 feet south of the intersection. The first roadway intersection is located more than 600 feet south of Novelty Hill Road.

(#31) Trilogy Parkway/Village Retail Access. As described above, northbound traffic on Trilogy Parkway may occasionally back up and possibly block this intersection during the PM peak hour. This would result in a reduced LOS for the eastbound and westbound approaches to the intersection. The impact of the traffic queues could be reduced by decreasing northbound traffic volumes on Trilogy Parkway. This could be done through design of the on-site road system in RRE to direct more traffic to Eastridge Drive. Shifting the trips to Eastridge Drive would not adversely affect the levels of service reported at intersections in that corridor.

With SR 520 Improvements- Intersection Levels of Service. Tables 17A and 17B in **Appendix H** summarize the resulting AM and PM peak hour levels of service for study intersections in the interchange vicinity in 2010; Table 17C of **Appendix H** shows footnotes referenced in Tables 17A and 17B, including those summarizing the assumed roadway and intersection improvements at each of these intersections. This section identifies intersections that would decline to LOS F as a result of RRE as compared to the baseline condition/No Action Alternative. All other intersections would remain at LOS E or better, or would operate at LOS F under the baseline condition/No Action Alternative.

No additional LOS F conditions would result from RRE as compared to the baseline condition/No Action Alternative with SR 520 improvements assumed to be constructed.

Avondale Road/Union Hill Road would operate at LOS F during the PM peak hour; however, it is at LOS F under the 2010 baseline condition/No Action Alternative assuming SR 520 improvements. Novelty Hill Road/Redmond Road would operate at LOS F during the AM peak hour unless signalized; however, it will be at LOS F under the 2010 baseline condition/No Action Alternative assuming SR 520 improvements unless signalized.

Intersections that would operate at LOS F under the baseline condition/No Action Alternative, and would meet King County's IS threshold (30 or more trips in one hour, and at least 20 percent new traffic generated by RRE within that hour) would be the same as those identified above under the discussion of intersection operations without SR 520 improvements, with the exception of Avondale Road/Union Hill Road, which would operate at LOS E under RRE with SR 520 improvements.

Additional LOS changes would result at some study intersections; however, these would not result in LOS F conditions. For details, see **Appendix H**.

With SR 520 Improvements - Roadway Traffic Operations. Construction of the SR 520 improvements would have only limited affect on roadway traffic operations within most of the study area. On Avondale Road, AM peak hour southbound traffic would exceed capacity and volumes would be higher than under the baseline condition, as they would with project traffic but without SR 520 improvements. However, project traffic would not cause increased volumes on the SR 520 overpass at SR 202, and the overpass would not exceed capacity. No additional impact to arterial operations from RRE would occur.

Safety

Increases in traffic volumes on study area arterials and site access roads due to RRE may result in higher occurrences of traffic accidents. There are no formulas that can be applied to forecast where accidents may occur based on increases in traffic volumes. The number, or rate of accidents, could increase, especially at congested intersections or roadways.

Currently planned roadway and intersection improvements would add capacity and eliminate some of the existing design deficiencies for roadways and intersections in the study area. These improvements would help to offset potential increases in traffic safety issues that may result from increased traffic due to RRE. The largest project traffic volume impacts would be found along Novelty Hill Road west of the project site. The County's Novelty Hill Road CIP project will provide capacity and modify horizontal and vertical alignments, which will improve safety in the corridor. Some of the alternatives being considered for the Novelty Hill CIP would improve other roadways in the study area. The improvements to these other roadways might improve safety in the other corridors and unimproved portions of Novelty Hill Road by diverting traffic to other routes.

The section of Novelty Hill Road between Redmond Ridge Drive and Trilogy will require widening to four lanes with or without RRE. If this segment is not widened, traffic safety issues could develop in the future.

RRE is not expected to significantly increase traffic safety hazards along Novelty Hill Road east of Trilogy. The eastern section of this roadway is identified as a HARS by King County. The Redmond Ridge and Trilogy UPDs are conditioned to make shoulder and other safety enhancements to this section of Novelty Hill Road as part of their permits. The 2010 traffic

forecasts for this segment of roadway are essentially unchanged with or without the RRE development. The reassignment of travel from the Novelty Hill Road corridor will occur over time. Therefore, project traffic on this section of Novelty Hill Road may not be fully offset by the 2010 horizon year.

Forecast congestion on Avondale Road could also result in traffic safety impacts. As discussed under Traffic Operations above, the traffic forecasts with or without the Proposed Action are expected to exceed the roadway capacity of Avondale Road south of Novelty Hill Road. The overcapacity condition could result in an increase in accidents with or without the Proposed Action. The AM peak hour traffic forecasts on Avondale Road south of NE 95th Street would be 3 percent higher with RRE compared to the 2010 baseline condition/No Action Alternative. During the PM peak hour, the traffic forecasts under RRE would be 2.2 percent higher than the 2010 baseline condition/No Action Alternative forecasts. Therefore, added traffic volumes from the Proposed Actions could indicate a potential increase in the number of traffic accidents in the corridor with RRE.

All on-site access and circulation roads and intersections would be designed and constructed to King County standards, or approved modifications. This would reduce the potential creation of unsafe roadways within RRE. The intersections of Novelty Hill Road at Trilogy Parkway and at Eastridge Drive would experience increased traffic and increased delays, which could result in an increase in accident potential; however, these two intersections have recently been constructed based on current King County Road Standards, which should help to minimize the potential in the number and/or severity of accidents.

If the potential for northbound traffic queues to develop along Trilogy Parkway from Novelty Hill Road to the Village Retail Access Drive materializes, the resulting queues could result in traffic safety problems. Traffic exiting the retail center could have difficulty entering the northbound traffic stream, which could result in angle or rear-end accidents. The impacts of the traffic queues on traffic operations could be reduced by lengthening the northbound left-turn pocket or reducing the volume of RRE traffic using Trilogy Parkway. Reducing the volume of RRE traffic using Trilogy Parkway could be accomplished by reconfiguring development area C to promote the use of Eastridge Drive. Traffic calming devices also could be installed along Muirwood Drive to make the route less convenient for traffic to/from development areas B and D.

Transit and Ridesharing

Design elements for on-site roadways are still being defined. Based on ongoing discussions with King County, some on-site streets in RRE may be designed to accommodate direct transit service. This could result in wider roadways to accommodate buses. Locations for transit shelters or other amenities to support transit use would also be identified. As a part of the RRE proposal, the applicant proposes to work with Redmond Ridge Residential Owners' Association and the Trilogy UPD TMP to provide a single, comprehensive community approach for transportation demand management for all of the UPDs. Combined, these plans would help consolidate an approach to transit and TDM in the area. The consolidation would provide a larger number of opportunities for ridesharing and future transit service.

The Redmond Ridge UPD development has initiated an association of residential owners to support actions concerning all aspects of TDM programs for the community, including transit services. This Association (Redmond Ridge Residential Owners Association) has contracted with the GRTMA to provide support for the TMP program. A description of the current GRTMA

programs is presented in the **Affected Environment** portion of this section. These include transportation coordination, promotion of transportation alternatives, ridematching services, park-and-pool lots within Redmond Ridge, a system of non-motorized facilities, and coordination on potential transit or shuttle van services.

KCC 21A.39.200(B)(2) requires that FCCs, such as RRE, incorporate transit-oriented design. King County Comprehensive Plan Policy U-175(B) requires FCCs to implement "[t]ransit-oriented site planning and traffic demand management programs, and that "[p]edestrian, bicycle, and high occupancy vehicle facilities be given high priority in design and management" of FCCs. The applicant proposes to meet this policy in RRE through a motorized circulation system designed to facilitate transit service to the site, and through implementation of a traffic demand management (TDM Program) as described above. Roadways within RRE that would serve as future potential transit routes would be designed to accommodate transit service (i.e., vehicle travelways would be sufficiently wide to accommodate bus access and turning movements, and the design would accommodate transit shelters). Evaluation of the degree to which the transit-oriented design and TDM measures proposed for RRE comply with the County's policy will occur during the Final EIS and ongoing review and planning for RRE.

Non-motorized Transportation

As shown on Figures 6 through 11 of **Chapter 2**, the on-site roadways constructed as a part of RRE would include pedestrian and bicycle facilities similar to those included as part of the approved Redmond Ridge and Trilogy UPDs. The RRE site plan includes approximately 10.3 miles of non-motorized facilities, including approximately 2.45 miles of trails and paths, plus approximately 7.6 miles of sidewalks. Approximately 0.95 miles of off-site trail is also proposed.

The RRE UPD trails system would provide regional connections to various surrounding corridors. See **Chapter 2** and the **Public Services and Facilities - Parks and Recreation** section for a description of proposed non-motorized facilities.

The increase in traffic in the study area due to the project would increase the potential for conflicts between non-motorized travel and vehicular traffic. These potential impacts would most likely occur at roadway crossings of trails, such as the powerline trail along the north boundary of the RRE site. This would require signing, markings, and illumination per King County standards, or approved modifications.

The proposed RRE project would provide links to the Redmond Ridge trail system, existing trails along the nearby utility corridors, and off-site portions of these regional corridors. The off-site portions include destinations, such as the City of Redmond Watershed and other soft surface trail systems.

An existing east/west trail corridor north of NE 80th Street connects the Redmond Ridge UPD to RRE. It is used by equestrian travelers. This trail connects to the BPA corridor allowing continuance of north/south equestrian travel, as well a link through the RRE project. The RRE on-site portion of the equestrian trail is included as part of the site plan for the recreation complex, which likely would result in minor relocation of the existing trail link within the proposed recreation complex.

Parking

Residential. Parking for the RRE residential units would be provided off-street, consistent with King County code or approved modifications. On-street parking is proposed on all internal streets except Eastridge Drive north of NE 109th Place. Parking on Eastridge Drive south of NE 103rd Place would be limited to the west side of the street. No off-site parking impacts are anticipated associated with the residential uses of the RRE development. The on-street parking proposed on some internal roads may affect future transit service or access by emergency vehicles. The design of the on-site road system is not yet finalized and on-street parking on some streets could be eliminated or modified.

Recreation Complex. Parking for the recreation complex is planned at 50 spaces per developed field. Two permanent gravel parking lots are proposed for the complex, providing 500 parking spaces. Construction of the parking would be phased with the development of the fields. The gravel lots could be striped as needed to provide for efficient use of parking areas, similar to the existing Sixty Acres soccer complex in Redmond.

Based on a ratio of 40 parking spaces per field used in King County's Section 36 Regional Park DEIS, the 10-field RRE recreation complex would require only 400 parking spaces. The additional 100-space allowance proposed for the RRE project reflects that there are no other activities (such as general play areas) that would demand additional spaces for the complex. The existing Sixty Acres soccer complex in Redmond provides approximately 700 spaces for 16 fields, or 44 spaces per field. This would translate into 440 spaces for the RRE recreation complex. The 500 spaces proposed for the project would provide more flexibility for users and minimize the potential impact of spillover parking into the RRE residential areas. The peak parking demands would likely occur during weekend soccer tournaments or other events, such as fundraisers.

Emergency Vehicle Access

Emergency vehicle access to the RRE development would be via the on-site access and circulation roads (see Figure 6 in **Chapter 2**). At least two access routes would be available to reach all residential areas of the RRE development. This would allow alternatives for emergency service providers in case a street is blocked for some reason. The on-site road system would comply with fire-apparatus access road requirements whenever the Fire Marshall deems a fire-apparatus access road is to be provided (per 1997 Uniform Fire Code, Article 9).

Access to/from Novelty Hill Road would be via Eastridge Drive or Trilogy Parkway/ Muirwood Drive. Internal to the site, emergency vehicles would be able to circulate using NE 104th Place and NE 97th Place. The limited use of cul-de-sacs would also support emergency vehicle access and circulation.

The primary entrance to the recreation complex would be via Eastridge Drive, which is planned as a "special access" neighborhood collector road. An alternative route would be via Muirwood Drive to NE 104th Place, 239th Place NE/242nd Avenue NE, and NE 97th Place.

Access Alternative C or C-1, both of which are analyzed in **Appendix I** at the direction of King County, would provide a direct roadway connection between RRE and Redmond Ridge. The new roadway corridors would provide a direct emergency access that would not require the use of Novelty Hill Road between RRE and the site of the planned fire station in Redmond Ridge.

The Access Alternative C route would be more direct route than the Access Alternative C-1 route. These access alternatives would also provide a more timely response route to RRE from Fire Stations 14 (5021 264th Avenue NE) and 15 (4200 228th Avenue NE) located south of Redmond Ridge (see **Appendix I** for further discussion).

School Access

No schools are currently located within one mile of the site; therefore, students would be bused to schools in the district. At this time, specific locations for school bus stops or circulator routes have not been defined. The lack of a connecting road between RRE and the Redmond Ridge UPD would require school traffic to use Novelty Hill Road. This would include school buses or students being dropped off or picked up by family or friends. This would add local area traffic to Novelty Hill Road between Trilogy Parkway and Redmond Ridge Drive. Access Alternative C-1, which is analyzed in **Appendix I** at the direction of King County, would provide a direct roadway and sidewalk connection between RRE and the site of the planned elementary school in Redmond Ridge that would not require the use of Novelty Hill Road. Access Alternative C would also provide a route between RRE and the elementary school without using Novelty Hill Road, although it would be less direct than Access Alternative C-1 (see **Appendix I** for further discussion).

Safe walkways are required between the proposed subdivision and the school bus stop for the development per RCW 58.17.110 and KCC 21A.18.100BB3. KCC 21A.18.100BB3 also specifies the need for access to school bus stops that are within or adjacent to a proposed residential use of five or more residential dwelling units and are identified by the affected school district. The proposal calls for sidewalks or other walkways/trails along all internal roadways. These sidewalks would connect to sidewalks along Trilogy Parkway and Eastridge Drive within The Village at Redmond Ridge. These facilities would provide safe walkways for students accessing the future school bus stops.

Some of the development areas would be within a 1-mile “straight-line” distance to the future elementary school site within the Redmond Ridge UPD. There would be connections to trails west of RRE between RRE and Redmond Ridge that could provide connections to the school site. However, due to potential security and visibility issues, these trails would not likely be designated as general school walkway routes.

Construction Impacts

Specific construction plans for RRE have not been prepared at this time. Therefore, it is difficult to estimate the number of truck trips per day or the specific types of vehicles that would be used. The duration of the construction activity would vary depending on the type and level of activity.

Construction activity would include possible hauling of export materials off-site and delivery of construction materials. Trucks and workers would use Eastridge Drive and/or Trilogy Parkway/ Muirwood Drive to access the site from Novelty Hill Road. All construction access is planned from Eastridge Drive or Trilogy Parkway/Muirwood Drive. Construction access from the 244th Avenue NE corridor east of the site is not proposed. Construction access from the south or west is also not part of the proposal.

The proposal includes development of a construction management program, similar to the programs for the adjacent Redmond Ridge and Trilogy UPDs. Overall, the level of construction traffic during peak travel periods and on an average weekday would be significantly lower than the number of project-generated trips at buildout analyzed in this report.

Some construction traffic to/from RRE would use Trilogy Parkway and/or Eastridge Drive after they are open to the public. These roadways are being designed and constructed to collector arterial standards; therefore, they should be adequate to accommodate the construction traffic.

Panhandle

The Panhandle would generate approximately 22 vehicle trips during the PM peak hour and 17 trips during the AM peak hour. These totals are below the 30-trip threshold for King County's Intersection Standard to apply.

The following summarizes potential impacts of the Panhandle development, exclusive of development of the RRE UPD. The transportation analysis of the RRE UPD presented above assumed buildout of the Panhandle as discussed in this section. That section provides a cumulative impact analysis of the two applications.

On-site Roadways and Circulation

Access to the Panhandle is proposed via extensions of 255th Avenue NE, north of NE 80th Street. In addition, two other existing off-site lots (not part of the proposal) would also likely use the new roads for access. NE 80th Street would connect the site to 238th Avenue NE/Redmond Ridge Drive, approximately 1 mile west of 255th Avenue NE.

Two north/south roadways, terminating in cul-de-sacs would provide access to individual lots. All on-site roadways would be designed to current King County Road Standards (KCRS). On-site roadways would be provided within 48-foot-wide right-of-ways, except the east-west local access road between sensitive area Tracts B and D. This local access street would be provided within a reduced 30-foot-wide right-of-way to minimize buffer and wetland impacts. A private access tract is also proposed within the proposed plat to provide access to lots extending from the cul-de-sacs. See **Chapter 2** for additional details on the Panhandle road design, and **Appendix H** for a discussion of existing roadways.

During six of the last ten years, according to King County staff, NE 80th Street to the east of 238th Avenue NE has been the subject of inquiries or drainage complaints regarding stormwater flooding approximately once each year. Since NE 80th Street is the sole public access roadway to the approximately 150 existing residences located along NE 80th Street, King County Roads Maintenance have kept the road open regardless of the level of flooding. Maintenance of culverts along NE 80th Street has addressed flooding issues in recent years, and the most recent documented complaints are from 2000 (KCWLRD Drainage Complaints Data, 2003).

The proposed access to the Panhandle would require two variances to the KCRS. Section 2.20 of the KCRS requires that a second access be provided to a residential subdivision if a single access serves more than 100 lots or dwelling units. NE 80th Street east of 238th Avenue NE currently serves in excess of 100 lots. The project applicant has submitted a variance request to the KCRS to waive the requirement for a second access connection. In addition, Section 2.08 of the KCRS limits the length of a permanent cul-de-sac to a maximum of 1,000 feet if it

serves no more than 50 lots. The project applicant has also submitted a variance request to allow the first permanent cul-de-sac to be installed on-site more than 600 feet from the existing NE 80th Street/255th Avenue NE intersection since it would serve more than 50 lots. The analysis of an access alternative meeting the KCRS is presented in **Appendix I** to this DEIS.

Traffic Distribution and Assignment

As proposed, all traffic to/from the Panhandle would use NE 80th Street to access the arterial system. More than 70 percent of the traffic is estimated to use 238th Avenue NE to/from the south of NE 80th Street, with the remainder using Redmond Ridge Drive to connect to destinations north of NE 80th Street. Approximately 50 percent of the project traffic would use Union Hill Road to/from the west.

Since the Panhandle would generate fewer than 30 peak hour trips, it would not meet King County's traffic volume threshold for Intersection Standards to apply. During the PM peak hour, the Panhandle would add 22 trips to 255th Avenue NE. and NE 80th Street. Approximately 16 project trips would use 238th Avenue NE between NE 80th Street and Union Hill Road, with 11 trips added to Union Hill Road west of 238th Avenue NE. Five or 6 trips would use Redmond Ridge Drive during the PM peak hour. **Figure 32** shows traffic distribution under the Panhandle proposal.

Traffic Forecasts

Traffic forecasts for the Panhandle were developed by adding project traffic to the 2010 baseline condition/No Action Alternative forecast. Buildout of 22 lots on the Panhandle would add 22 vehicles to NE 80th Street during the PM peak hour between 238th and 255th Avenues NE. This would represent approximately 15 percent of the forecasted 2010 traffic volumes just east of 238th Avenue NE.

The Panhandle would also increase traffic on 255th Avenue NE between NE 80th and NE 85th Streets by 22 vehicles per hour, approximately one additional vehicle trip every three minutes, on average.

Traffic Operations

No intersections would decline to LOS F, and no roadway segments would exceed capacity, as a result of the Panhandle Proposed Action. The NE 80th Street/238th Avenue NE intersection is forecast to operate at a 2010 LOS C during the AM and PM peak hours with or without the Panhandle. The NE 80th Street/255th Avenue NE intersection is forecast to operate at LOS A with or without the Panhandle. LOS at all study intersections would be the same as under the baseline condition/No Action Alternative.

Since the total PM peak hour trips that would be generated by the Panhandle would be below 30, King County's Intersection Standard would not apply.

Safety

Section 1.03A of the *KCRS* requires that any land development that impacts the safety (or service level or operational efficiency) of serving roads improve the road in accordance

Figure 32
Traffic Distribution—Panhandle Proposed Action

with the standards. The extent of the off-site improvements would be based on an assessment of the impacts by King County. The improvements would also be required if identified pursuant to other County codes or ordinances. The increase of traffic on 255th Avenue NE would increase the number of potential conflicts with existing traffic in the area. However, the low volume of traffic would not likely result in a traffic safety hazard. For rural subaccess streets such as 255th Avenue NE, KCRS call for a minimum 20-foot-wide pavement width for a rural subaccess street. A total 28-foot roadway width, including shoulders, is identified in the KCRS. The widening of 255th Avenue NE north of NE 85th Street would provide more room for vehicles to pass in opposite directions and provide additional room for pedestrians or bicyclists. The increase in traffic on NE 80th Street would not likely result in a traffic safety hazard, and would only result in a minimal increase in accident potential. The limited increase in traffic would also result in a potential minimal impact to pedestrian and bicycle safety along NE 80th Street due to the substandard roadway width and lack of adequate shoulders.

Transit/Ridesharing

The low density and rural development of the Panhandle and surrounding area would limit the project demand for and impact on transit service or opportunities for ride sharing. Primary transit access/ opportunities for the site would be via park-and-ride lots located in Redmond or other off-site locations. The park-and-pool lots located within the Redmond Ridge UPD would be open for use by residents of the Panhandle.

Non-motorized Transportation

The on-site road system would be designed and constructed to KCRS or approved variances. Non-motorized traffic within the site could use the shoulders of on-site roads.

As discussed above, some widening of 255th Avenue NE would be necessary to enhance non-motorized travel in the immediate vicinity south of the Panhandle site.

Parking

All parking would be provided on individual lots, consistent with King County code.

Emergency Vehicle Access

Under the proposal, emergency vehicles would serve the Panhandle via NE 80th Street. The width of NE 80th Street is slightly under the 20-foot minimum width requested for emergency vehicle access. Addition of 22 more homes would result in a minor increase in potential emergency service calls to the area (see the **Public Services and Facilities** section for a discussion of potential calls for service). As discussed above, KCRS requires a second access to subdivisions if more than 100 lots or dwelling units are accessed via a single roadway (the applicant has submitted a request for a variance to this rule). The use of a single access via NE 80th Street and 255th Avenue NE could affect emergency vehicle access to the site. Under the current proposal, emergency vehicle access would be restricted if NE 80th Street is blocked east of 238th Avenue NE. See Impacts of the Access Alternative below and **Appendix I** for a discussion of options for a second access.

School Access

Safe walkways are required between the proposed property subdivision and the school bus stop for the development per RCW 58.17.110 and KCC 21A.18.100BB3. KCC 21A.18.100BB3 also specifies the need for access to school bus stops that are within or adjacent to a proposed residential use of five or more residential dwelling units and are identified by the affected school district. School buses serve the area with bus stops along NE 80th Street located at 243rd Avenue NE, 24818 NE 80th Street, 24550 NE 80th Street, 250th Avenue NE, 252nd Avenue NE, 254th Avenue NE, and 255th Avenue NE. RCW 58.17.110, would require a safe walkway between the Panhandle plat and NE 80th Street. 255th Avenue NE has recently been reconstructed to KCRS between NE 80th and NE 85th Streets, including a combination of paved and gravel shoulders. North of NE 85th Street, 255th Avenue NE has fairly limited gravel shoulders and a single travel lane. This off-site section would need to be improved to meet KCRS.

Construction Impacts

Development of the Panhandle would result in construction traffic on NE 80th Street and other local access roads. Depending on the pace of development and sale of the new lots and housing, construction activity could be limited to a couple of years or extended for five or more years. Construction traffic on 255th Avenue NE would result in additional traffic conflicts due to the narrow roadways. The construction traffic could also impact the roadway surface of 255th Avenue NE, which may require repairing of the road following construction. However, overall construction impacts would not be significant.

Cumulative Impacts

The analysis of RRE assumed a total of 800 housing units on RRE and 22 units on the Panhandle (although the combined total would not be more than 800); therefore, cumulative impacts for development of the two sites would be the same as those described for RRE.

Impacts of the Access Alternatives

As directed by King County, four additional roadway connections, which are not part of the applicant's proposal, are analyzed in this EIS. These access alternatives, referred to as Alternatives A, B, C and C-1 and described below, define options to potentially improve access and circulation to the sites and site vicinity. The potential locations of the four access alternatives, as analyzed in this EIS, are shown in **Figure 33**. Alternative locations for the Access Alternatives may be determined by King County and analyzed in the Final EIS.

Access Alternative A would result in a north-south connection through the Panhandle site. This access alternative would provide a second access to the Panhandle from the north by connecting the proposed extension of 255th Avenue NE through the Panhandle to the 243rd/244th/248th Avenue NE corridor. The connection is analyzed in this EIS as a Rural Neighborhood Collector. This alternative would eliminate the need for variances to the 100-lot rule and to the cul-de-sac length rule for access to the Panhandle.

Access Alternative B would provide an east-west connection between RRE and the Panhandle. This access alternative would connect Eastridge Drive in RRE to the proposed 255th Avenue

Figure 33
Access Alternatives

NE in the Panhandle and ultimately to NE 80th Street (via 255th Avenue NE), providing a second access to the Panhandle and a third access to RRE. The connection is analyzed in this EIS as a Rural Neighborhood Collector. This alternative would eliminate the need for variances to the 100-lot rule and the cul-de-sac rule for access to the Panhandle.

Access Alternative C would provide an east-west connection between RRE and the Redmond Ridge UPD. This access alternative would connect Muirwood Drive in RRE to Redmond Ridge Drive in the existing Redmond Ridge development by extending one of the Redmond Ridge business park access roads, providing a direct connection between the Redmond Ridge and RRE UPDs and providing a third access to RRE. This connection is analyzed in this EIS as an Urban Neighborhood Collector. Variances to the 100-lot rule and the cul-de-sac rule would still be required for access to the Panhandle under this alternative.

Access Alternative C-1 would provide an east-west connection between RRE and the Redmond Ridge UPD, similar to Access Alternative C; however, this route would be located further to the south. This access alternative would connect Cedar Park Crescent at its intersection with Redmond Ridge Drive in Redmond Ridge to NE 100th Street in RRE. This connection is analyzed in this EIS as an Urban Neighborhood Collector, with a request for modification to the standard for width of shoulders in order to accommodate a hard surface path. Variances to the 100-lot rule and the cul-de-sac rule would still be required for access to the Panhandle under this alternative.

The RRE travel forecasting model was used to estimate potential changes in traffic volumes and travel patterns under each of the access alternatives. The baseline condition for analysis of the access alternatives included build-out of RRE and the Panhandle in 2010, as defined under the Proposed Actions, without construction of any of the access alternatives. The results of this analysis of the access alternatives are described below.

Access Alternative A

Under Alternative A, the following transportation system operation impacts would result:
LOS degradation:

- (#20) NE 80th Street/Redmond Ridge Drive (C to D – AM peak hour only)[1]

LOS improvements

- None.

(Footnotes to LOS impacts are shown below discussion of Alternative C-1.)

Under Alternative A there would be a potential for limited increase or decrease in accidents at the Novelty Hill Road/243rd Avenue NE intersection. The potential increase in accidents would not likely require major improvements to be made. This alternative would result in the potential for an increase in accidents on the 243rd/244th/248th Avenue NE corridor and on NE 80th Street.

By connecting the rural residential areas north and south of the Panhandle, Alternative A would also provide a non-motorized connection between these areas. Additionally, this alternative would connect to the existing historical use powerline trail on the southern edge of RRE.

Access Alternative B

Under Access Alternative B, the following transportation system operation impacts would result:
LOS degradation:

- (#20) NE 80th Street/Redmond Ridge Drive (C to E – AM peak hour only)[1]
- (#5) Novelty Hill Road/Cedar Park Crescent (B to C – PM peak hour only)[1]

LOS improvement:

- (#9) Novelty Hill Road/Trilogy Parkway (D to C – AM peak hour only)

Queuing impact improvement:

- (#9) Novelty Hill Road/Trilogy Parkway

(Footnotes to LOS impacts are shown below discussion of Alternative C-1.)

Under Alternative B, there would be a potential increase in safety problems, including conflicts between vehicles and pedestrians at the RRE recreation complex. There would also be a potential increase in accidents along NE 80th Street, unless improvements are made.

Access Alternative B would provide an additional non-motorized connection in the project area, allowing pedestrians and bicyclists access between RRE and the Panhandle via the new roadway and shoulder, and allowing pedestrians and bicyclists within RRE to use NE 80th Street instead of Novelty Hill Road to and from the west. Alternative B would also provide non-motorized access for residents of the Panhandle and the NE 80th Street area to the recreation complex in RRE.

Access Alternative C

Under Access Alternative C, the following transportation system operation impacts would result:
LOS degradation:

- (#5) Novelty Hill Road/Cedar Park Crescent (B to C – PM peak hour only)[1]
- (#20) NE 80th Street/Redmond Ridge Drive (C to D – AM peak hour only)[1]
- (#29) Muirwood Drive/Trilogy Parkway (B to C – PM peak hour only)[1]
- (#31) Trilogy Parkway/Village Retail Access (B to C – AM; E to F –PM)[3]

LOS improvement:

- (#7) Novelty Hill Road/Redmond Ridge Drive (F to E – PM peak hour only)
- (#8) Novelty Hill Road/234th Avenue NE (F to E – PM peak hour only)

Queuing impact degradation:

- (#9) Novelty Hill Road/Trilogy Parkway
- (#31) Trilogy Parkway/Village Retail Access

(Footnotes to LOS impacts are shown below discussion of Alternative C-1.)

Under Alternative C, there would be a potential increase in safety problems at the Redmond Ridge business park and on Trilogy Parkway between Novelty Hill Road and Muirwood Drive. There would also be a potential for safety improvements on Novelty Hill Road, between Trilogy Parkway and Redmond Ridge Drive.

By providing a roadway with a sidewalk on at least one side, Alternative C would provide an improved non-motorized connection between RRE and the Redmond Ridge UPD; however, the currently approved trail plan for the Redmond Ridge UPD already includes a non-motorized connection in this corridor.

Access Alternative C-1

Under Access Alternative C-1, the following transportation system operation impacts would result:

LOS degradation:

- (#5) Novelty Hill Road/Cedar Park Crescent (B to C – PM peak hour only)[1]
- (#20) NE 80th Street/Redmond Ridge Drive (C to D – AM Peak Hour only)[1]

LOS improvement:

- (#7) Novelty Hill Road/Redmond Ridge Drive (F to E – PM peak hour only)[2]
- (#8) Novelty Hill Road/234th Avenue NE (F to E – PM peak hour only)
- (#10) Novelty Hill Road/Eastridge Drive (F to E – AM peak hour only)[2]
- (#9) Novelty Hill Road/Trilogy Parkway (B to A – AM peak hour only)
- (#29) Muirwood Drive/Trilogy Parkway (B to A – AM peak hour only)

Queuing impact degradation:

- (#9) Novelty Hill Road/Trilogy Parkway
- (#31) Trilogy Parkway/Village Retail Access

Footnotes to LOS impacts of Access Alternatives:

1. LOS degradation does not result in mitigation being required.
2. Potential mitigation of Proposed Action's impacts to resolve LOS conditions under Intersection Standards.
3. Intersection with private roadways/driveways not regulated by Intersection Standards. Potential adverse impact resulting from this Access Alternative.

Under Alternative C-1, there would be a potential increase in safety impacts on Trilogy Parkway south of Novelty Hill Road. There would also be a potential safety improvement on Novelty Hill Road, between Trilogy Parkway and Redmond Ridge Drive.

By providing a roadway with a sidewalk on at least one side, Alternative C-1 would provide an improved non-motorized connection between RRE and Redmond Ridge. Alternative C-1 may intersect with existing pedestrian and equestrian north/south trails in the Redmond Ridge UPD, potentially impacting users of those trails due to traffic volumes and safety issues.

A summary of the characteristics and potential impacts of the access alternatives is shown in **Table 39**. See **Appendix I** for further information on the access alternatives, including further discussion of the transportation-related impacts of the alternatives.

ALTERNATIVES

Alternative 1 – 5-acre Rural Development

The analysis of impacts under Alternative 1 for RRE includes impacts that would be generated by development of both the RRE and Panhandle sites under this Alternative. Following this discussion is a discussion of impacts that would be generated by development of the Panhandle only under Alternative 1. See **Chapter 2** for a complete description of Alternative 1.

Redmond Ridge East

Alternative 1, with 91 total dwelling units, including 67 units on RRE and up to 24 units on the Panhandle site, would generate approximately 870 daily trips with 640 trips accessing the site to/from the north through the Village at Redmond Ridge. Approximately 230 daily trips would

Table 39
SUMMARY OF THE ACCESS ALTERNATIVES

	Access Alternative A	Access Alternative B	Access Alternative C	Access Alternative C-1
Description	Would provide a north/south connection through the Panhandle; would connect 255th Avenue NE in Panhandle to 243rd/244th/248th Avenue NE	Would provide an east/west connection between RRE and the Panhandle; would connect Eastridge Drive in RRE to the 255th Avenue NE in the Panhandle	Would provide an east/west connection between Redmond Ridge and RRE; would connect Redmond Ridge Drive in the Redmond Ridge UPD to Muirwood Drive in RRE	Would provide an east/west connection between Redmond Ridge and RRE; would connect Redmond Ridge Drive/Cedar Crescent Drive in the Redmond Ridge UPD to NE 100th Street in RRE
Variances to King County Road Standards	Would eliminate need for variances to the 100-lot rule and the cul-de-sac length rule for access to the Panhandle	Would eliminate the need for variances to the 100-lot rule and the cul-de-sac rule for access to the Panhandle	Variances to the 100-lot rule and the cul-de-sac rule would still be required for access to the Panhandle	Variances to the 100-lot rule and the cul-de-sac rule would still be required for access to the Panhandle
Length of Roadway	+/- 1,500 Linear Feet	+/- 2,700 Linear Feet	+/- 1,500 Linear Feet	+/- 3,300 Linear Feet
Impervious Surface Area	+/- 1.3 Acres	+/- 2.4 Acres	+/- 1.1 Acres	+/- 2.4 Acres
Total Clearing	2.4 Acres	1.55 Acres	1.96 Acres	6.0 Acres
Earthwork (Cut, Fill, Stripping)	24,200 Cubic Yards	12,725 Cubic Yards	25,850 Cubic Yards	54,535 Cubic Yards
Discharge Point	SR-5 drainage (erosion hazard feature)	Infiltration facility in RRE/Panhandle drainage system	BBC45 (bog wetland BBC44 downstream)	BBC 52 (bog wetland), EC 61, and G/AA/VS 15
Wetland Clearing	<0.1 Acre of Class 2 wetland	0.2 Acres of Class 2 wetland	0.3 Acres of Class 1 wetland	0.4 Acres of Class 1 and 2 wetlands (0.1 Acres of Class 1 wetland and 0.3 Acres of Class 2 wetland)
Wetland Fill	<0.1 Acre of Class 2 wetland	0.2 Acres of Class 2 wetland	It is assumed that no fill would result given bridge crossing of a Class 1 wetland with a bog component	0.4 Acres of Class 1 and 2 wetlands (0.1 Acres of Class 1 wetland and 0.3 Acres of Class 2 wetland)
Wetland Buffer Clearing	0.2 Acres of Class 2 wetland buffer	0.2 Acres of Class 2 wetland buffer	1.7 Acres of Class 1 wetland buffer	5.6 Acres of Class 1 and 2 wetland buffer
Wetland Buffer Fill	0.2 Acres of Class 2 wetland buffer	0.2 Acres of Class 2 wetland buffer	1.3 Acres of Class 1 wetland buffer	5.6 Acres of Class 1 and 2 wetland buffer
Estimated Construction Sedimentation Risk	Minor potential for additional sedimentation impacts, beyond those identified for the Proposed Actions	Moderate potential for additional sedimentation impacts, beyond those identified for the Proposed Actions	High potential for additional sedimentation impacts, beyond those identified for the Proposed Actions	Very high potential for additional sedimentation impacts beyond those identified for the Proposed Actions
Receiving Water Sensitivity	Moderately sensitive receiving waters	Minimally sensitive receiving waters	Highly sensitive receiving waters	Very highly sensitive receiving waters
Estimated Increase in Stormwater Contaminants	Minor potential for additional impacts, beyond those identified for the Proposed Actions	High potential for additional impacts, beyond those identified for the Proposed Actions	Moderate potential for additional impacts, beyond those identified for the Proposed Actions	Very high potential for additional impacts, beyond those identified for the Proposed Actions
Stream Crossing	Yes, crossing of headwater tributary to SR-5 required	Yes, crossing of headwater tributary to SR-5 required	No stream crossing required	No stream crossing required

Table 39
SUMMARY OF ACCESS ALTERNATIVES (CONT'D)

	Access Alternative A	Access Alternative B	Access Alternative C	Access Alternative C-1
Plants and Animals/Fisheries	Approximately 0.2 acre of forest and shrub wildlife habitat would be eliminated that would otherwise be part of rural residential lots and associated facilities on the Panhandle. Water quality and wetland habitat could improve as a result of flow being redirected to its natural drainage course with construction of the roadway connection. No other impacts to fisheries resources expected with implementation of appropriate mitigation.	Approximately 1.6 acres, including mainly native second-growth forest, but also 0.2 acre of wetland habitat, would be eliminated; however, much of the cleared native forest would otherwise be part of the RRE recreation complex. No impacts to fisheries resources expected with implementation of appropriate mitigation measures.	Approximately 2 acres of native vegetation in Class 1 wetlands and forested buffers, which provide wildlife habitat and are within an existing NRPA, would be eliminated. The existing wildlife habitat network on the Redmond Ridge UPD would be interrupted at a relative narrow point. Active beaver dams could be destabilized or destroyed, affecting the upstream peat bog community in wetland BBC 52. Construction could destabilize or destroy beaver dams and in turn alter water levels in wetland BBC 52 and peat bog community upstream. Could indirectly affect fish living downstream in Colin Creek and Welcome Lake; however, potential impacts would be reduced to insignificant levels with appropriate mitigation measures.	Approximately 5.6 acres of upland forest and 0.4 acres of wetland would be cleared, eliminating forest and wildlife habitat and bisecting an existing NRPA. The existing Redmond Ridge UPD buffer mitigation bank would be reduced. The existing wildlife habitat network on the Redmond Ridge UPD would be interrupted at nearly its widest point. No impacts to fisheries resources expected, with implementation of appropriate mitigation measures
Noise, Aesthetics, Light and Glare	Increases in noise, light and glare associated with increased traffic could affect existing rural areas to the north and south of the Panhandle; however; the increase would not be substantial	Increases in noise, light and glare associated with increased traffic would affect rural areas south of the Panhandle and urban areas in the Redmond Ridge, Trilogy, and RRE developments; urban areas would have moderate levels of noise, light and glare without the access alternative	Increases in noise, light and glare associated with increased traffic would affect urban areas, including portions of the existing Redmond Ridge and Trilogy UPDs, and portions of the proposed RRE urban development; however, these areas would have moderate levels of noise, light and glare without the access alternative	Increases in noise, light and glare associated with increased traffic would affect urban areas, including portions of the existing Redmond Ridge and Trilogy UPDs, and portions of the proposed RRE urban development; however, these areas would have moderate levels of noise, light and glare without the access alternative
Rural Character	Minimal potential to impact rural character of the Panhandle and rural areas to the north and south of the Panhandle site	More potential to impact rural character of the Panhandle and rural areas to the south of the Panhandle site	No potential to impact rural character of the rural areas to the north and south of the Panhandle site	No potential to impact rural character of the rural areas to the north and south of the Panhandle site
Plans and Policies	Consistent with policies that encourage connectivity and provision of emergency access; inconsistent with policies that discourage through connections in rural areas and encourage protection of the environment	Consistent with policies that encourage connectivity and provision of emergency access; inconsistent with policies that discourage through connections in rural areas and encourage protection of the environment	Consistent with policies that encourage connectivity and discourage connections between urban and rural areas; inconsistent with policies that encourage protection of the environment; policies that encourage provision of emergency access do not apply.	Consistent with policies that encourage connectivity and discourage connections between urban and rural areas; inconsistent with policies that encourage protection of the environment; policies that encourage provision of emergency access do not apply.
Emergency Vehicle Access	Improved for the Panhandle and rural areas to the north and south of the Panhandle site	Improved for the Panhandle and rural areas to the south of the Panhandle site	Improved, but not necessary for RRE or Redmond Ridge	Improved, but not necessary for RRE or Redmond Ridge
Transportation System Operation	LOS degradation: • (#20) NE 80th Street/Redmond Ridge Drive (C to D – AM peak hour only)[1] LOS improvement: • None	LOS degradation: • (#20) NE 80th Street/Redmond Ridge Drive (C to E – AM peak hour only)[1] • (#5) Novelty Hill Road/Cedar Park Crescent (B to C – PM peak hour only)[1] LOS improvement: • (#9) Novelty Hill Road/Trilogy Parkway (D	LOS degradation: • (#5) Novelty Hill Road/Cedar Park Crescent (B to C – PM peak hour only)[1] • (#20) NE 80th Street/Redmond Ridge Dr (C to D – AM peak hour only)[1] • (#29) Muirwood Drive/Trilogy Parkway (B to C – PM peak hour only)[1] • (#31) Trilogy Parkway/Village Retail Access (B to C – AM; E to F – PM)[3]	LOS degradation: • (#5) Novelty Hill Road/Cedar Park Crescent (B to C – PM peak hour only)[1] • (#20) NE 80th Street/Redmond Ridge Drive (C to D – AM peak hour only)[1] LOS improvement: • (#7) Novelty Hill Road/Redmond Ridge Drive (F to E – PM peak hour only)[2]

	Access Alternative A	Access Alternative B	Access Alternative C	Access Alternative C-1
		to C – AM peak hour only) Queuing impact improvement: • (#9) Novelty Hill Road/Trilogy Parkway	LOS improvement: • (#7) Novelty Hill Road/Redmond Ridge Drive (F to E – PM peak hour only) • (#8) Novelty Hill Road/234th Avenue NE (F to E – PM peak hour only) Queuing impact degradation: • (#9) Novelty Hill Road/Trilogy Parkway • (#31) Trilogy Parkway/Village Retail Access	• (#8) Novelty Hill Road/234th Avenue NE (F to E – PM peak hour only) • (#10) Novelty Hill Road/Eastridge Drive (F to E - AM peak hour only)[2] • (#9) Novelty Hill Road/Trilogy Parkway (D to C – AM peak hour only) • (#29) Muirwood Drive/Trilogy Parkway (B to A – AM peak hour only) Queuing impact degradation: • (#9) Novelty Hill Road/Trilogy Parkway • (#31) Trilogy Parkway/Village Retail Access
Transportation System Safety	Potential limited increase or decrease in accidents at the Novelty Hill Road intersection with 243rd Avenue NE (would not likely require major improvements to be made); potential increase in accidents 243rd/244th/248th Avenue NE and NE 80th Street	Potential increase in safety problems including conflicts between vehicles and pedestrians at RRE recreation complex; potential increase in accidents along NE 80th Street unless improvements are made	Potential increases in safety impacts at Redmond Ridge business park and on Trilogy Parkway between Novelty Hill Road and Muirwood Drive; potential safety improvements on Novelty Hill Road, between Trilogy Parkway and Redmond Ridge Drive	Potential increase in safety impact on Trilogy Parkway south of Novelty Hill Road; potential safety improvements on Novelty Hill Road, between Trilogy Parkway and Redmond Ridge Drive
Parks and Recreational Facilities	Improved pedestrian access to the RRE recreation complex and other RRE parks and recreation facilities for residents of the Panhandle and rural areas to the north and south of the Panhandle	Improved vehicular and pedestrian access to the RRE recreation complex and other RRE parks and recreational facilities for residents of the Panhandle and rural areas to the north and south of the Panhandle	Improved vehicular and pedestrian access to parks and recreational facilities in Redmond Ridge for residents of RRE and vice versa; Conversion of existing soft-surface trail connecting RRE to Redmond Ridge to sidewalk, limiting equestrian use	Improved vehicular and pedestrian access to parks and recreational facilities in Redmond Ridge for residents of RRE and vice versa
School Access	Limited improvement to school access.	Limited improvement to school access.	Improved access to the planned elementary school in Redmond Ridge for residents of RRE; Improved access for school bus routes serving both RRE and Redmond Ridge.	Improved access to the planned elementary school in Redmond Ridge for residents of RRE; Improved access for school bus routes serving both RRE and Redmond Ridge.

1 LOS degradation does not result in mitigation being required.
2 Potential mitigation for Proposed Action's impacts to resolve LOS conditions under Intersection Standards.
3 Intersection with private roadways/driveways not regulated by Intersection Standards. Potential adverse impact resulting from this Access Alternative.
Note: The analysis of the access alternatives is based on the assumed roadway designs, the actual designs and locations could vary.

access the Panhandle area via NE 80th Street and 255th Avenue NE under Alternative 1 (this analysis included development of the Panhandle site as described under Alternative 1 in **Chapter 2**). Alternative 1 is estimated to generate 68 vehicle trips during the AM peak hour and 92 during the PM peak hour.

On-site Roadways and Circulation

Primary access to RRE would be from Eastridge Drive (238th Avenue NE) to/from Novelty Hill Road. Fifty-six of the 67 lots on RRE would use this access. Cul-de-sac streets serving 10 or fewer lots would connect to the primary access road. These lots would have access to the Village at Redmond Ridge retail center via Muirwood Drive to connect to Trilogy Parkway. The other 11 lots would be accessed from Muirwood Drive via Trilogy Parkway.

The plat layout includes a stub road connecting to 244th Avenue NE and the Welcome Wood neighborhood east of the site. This stub road connection is needed to eliminate what would otherwise be an excessively long cul-de-sac (see KCRS 2.08). **Figure 13** shows a conceptual site plan for Alternative 1 for RRE; if Alternative 1 were pursued, the plat layout would need to be adjusted to meet County regulations. If the RRE site were rezoned to rural designation as is assumed based on the site reverting to or being reclassified to rural zoning, the connection to the Welcome Wood neighborhood would not be in conflict with King County Comprehensive Plan policies relating to street connections between urban and rural areas.

Traffic Distribution and Assignment

Figure 24 in **Appendix H** shows the PM peak hour traffic distribution for the 67 single-family dwelling units under Alternative 1. The percentage distribution to/from the site would be nearly identical to the residential distribution of RRE. Approximately 20 percent of the 68 PM peak hour trips (15 trips) would connect with the Redmond Ridge or Trilogy UPDs, including the business park and retail centers.

King County's IS establishes a threshold of 30 trips in one hour and 20 percent of a project's trips during that hour, as discussed under Concurrency and Level of Service Standards under **Affected Environment** in this section. Alternative 1 would fall below the 30-trip threshold at most locations; only intersections on Novelty Hill Road between 208th Avenue NE and Eastridge Drive would meet the IS threshold.

Traffic Volume Forecasts

Figures 25 and 26 in **Appendix H** show the resulting daily and peak hour traffic forecasts. The forecasts are very similar to the 2010 baseline condition/No Action volumes, since Alternative 1 would generate relatively few trips. (The analysis assumes the SR 520/SR 202 Stage 3 interchange project is not constructed by 2010. As previously discussed, the interchange improvements primarily affect traffic forecasts in the southeast Redmond vicinity, as opposed to the area in proximity to the sites. Analyses of conditions with the Stage 3 interchange were not conducted, since the Alternative 1 would not meet IS thresholds in the SR 520/SR 202 interchange vicinity.)

Traffic Operations

Intersection Levels of Service. Tables 18A and 18B in **Appendix H** compare the AM and PM peak hour levels of service under the baseline condition/No Action Alternative and Alternative 1, respectively. Table 18C of **Appendix H** shows footnotes referenced in Tables 18A and 18B, of **Appendix H**, including those identifying specific programmed improvements assumed at each intersection in conducting the LOS analyses. This section identifies intersections that would decline to LOS F as a result of the Alternative 1, as compared to the baseline condition/No Action Alternative. All other intersections would remain at LOS E or better, or would operate at LOS F under the baseline condition/No Action Alternative.

One intersection would degrade to LOS F conditions as a result of Alternative 1:

- (#8) Novelty Hill Road/234th Avenue NE (PM peak hour only)

Tables 19A and 19B in **Appendix H** show the levels of service under Alternative 1 with the addition of improvements identified to resolve LOS F conditions under the baseline condition/No Action Alternative and Alternative 1. Table 19C of **Appendix H** shows footnotes referenced in Tables 19A and 19B, of **Appendix H**, including identifying the unfunded improvements. With the identified improvements, the one intersection that would degrade to LOS F under Alternative 1 (Novelty Hill Road/234th Avenue NE) would operate at LOS D conditions.

The following intersections would operate at LOS F under the baseline condition/No Action Alternative, and would meet King County's IS threshold of 30 PM trips in one hour and 20 percent of trips generated by Alternative 1 during that hour:

- (#6) Novelty Hill Road/Redmond Ridge Retail Access
- (#8) Novelty Hill Road/234th Avenue NE (AM peak hour only under baseline condition; however, PM peak hour LOS under Alternative 1 would be F)

Additional LOS changes would result at some study intersections; however, these would not result in LOS F conditions. For details, see **Appendix H**.

Roadways. The increase in traffic due to Alternative 1 would not significantly affect roadway traffic operations compared to the baseline condition/No Action Alternative.

Safety

Alternative 1 would result in limited increases in forecast traffic volumes on study area roads. King County's Novelty Hill Road CIP project (based on 2028 traffic forecasts) would address existing or potential safety issues that could be most impacted by development of Alternative 1.

Alternative 1 would add five trips during the PM peak hour to Novelty Hill Road east of Eastridge Drive. This easternmost section of Novelty Hill Road has been identified as a high accident roadway segment (HARS). The five project trips would represent approximately 0.3 percent of the total 2010 PM peak hour volume and would not be considered a significant impact to safety.

No other safety impacts would be expected under Alternative 1.

Transit and Ridesharing

The low density and rural development of the RRE site under Alternative 1 would not generate significant levels of transit demand. The location of the site next to the Redmond Ridge and Trilogy UPDs would allow opportunities for RRE residents to access King County Metro service. The transit service would be primarily along Novelty Hill Road. Some of the residents in the northern portion of the RRE site may be able to walk to transit, but more likely transit would be accessed by automobile. This could include residents driving to the Bear Creek or Redmond Park-and-Ride lots, or to park-and-pool lots in the Redmond Ridge UPD. Some users may access transit at transit stops within The Village at Redmond Ridge development.

The additional 67 dwelling units could also be incorporated into the ridesharing programs for the existing UPDs. This would likely have a minimal impact on the effectiveness of these programs.

Non-motorized Transportation

The on-site roadways would be constructed to rural standards and non-motorized travel would occur on paved shoulders. The road shoulders would provide pedestrian connections to Novelty Hill Road through the Village at Redmond Ridge.

The on-site roadways would intersect with the east-west Puget Sound Energy corridor providing connections to the regional trail system in the area. Street connections in the southern portion of the plat would cross the Bonneville Power line route. This would also connect the RRE development to the regional trail system.

A portion of the soft-surface equestrian/pedestrian trail on the RRE site (within the BPA transmission line easement) would remain available for public use. However, the existing east-west equestrian trail along the south plat boundary would be eliminated under this alternative, or it could be relocated off-site.

No formal connections to the Redmond Ridge UPD trail system west of the site are proposed under Alternative 1. The low density of this alternative would result in minimal use of formal connections by residents of RRE. Informal trail connections would likely be developed over time by individuals in the area.

Parking

No parking impacts would be expected. All parking for Alternative 1 would be provided on individual lots within the development.

Emergency Vehicle Access

Emergency vehicle access would be provided from Novelty Hill Road using either Eastridge Drive or Trilogy Parkway and Muirwood Drive. A secondary route would not be provided, nor is it required per KCRS.

School Access

On-site roads would be constructed to meet KCRS or approved modifications. These would include adequate, safe walkways to connect to school bus stops either within the site or in adjacent developments.

Construction Impacts

Construction traffic would use Trilogy Parkway and Eastridge Drive to access/egress the site from Novelty Hill Road. Construction traffic levels would vary depending on the type of activity and the number of units being constructed at a given time. A construction management program would likely be needed to minimize the impacts on future development within the Village at Redmond Ridge.

Panhandle

Alternative 1 would include up to 24 single-family dwelling units on the Panhandle. Access to the site would be the same as described for the proposed Panhandle scenario. As with the Proposed Action, the plat design would not comply with the requirements of KCRS Sections 2.08 or 2.20. Analysis of an access alternatives to connect north to the 243rd/244th/248th Avenue NE corridor or west to the RRE UPD is presented in **Appendix I**.

The potential transportation impacts of the Panhandle development under this alternative would be similar to those presented for the Panhandle proposal. Under Alternative 1, the Panhandle development area would generate approximately 20 more vehicle trips per day as compared to the Proposed Action. This would include two trips during the PM peak hour, which would not change conclusions reached as part of the prior analysis of transportation impacts of the Panhandle.

Alternative 2 – No Action

Alternative 2, the No Action Alternative, could result in 20 single-family dwelling units being developed: 14 on the RRE site and 6 on the Panhandle site. This would result in approximately 190 total trips per day, with 130 to 140 trips accessing to/from the north through The Village at Redmond Ridge and 50 to 60 accessing the Panhandle via NE 80th Street.

Development under Alternative 2 would generate 20 peak hour trips, which is below the 30-trip threshold of King County's IS. Intersection LOS and roadway operations under Alternative 2 would be the same as those described under the baseline condition/No Action Alternative. The primary site access intersections to the 14 units on the RRE site (Novelty Hill Road/Trilogy Parkway and Novelty Hill Road/Eastridge Drive) would operate at LOS D or better; therefore, Alternative 1 would not result in intersection or roadway operations impacts. Additionally, the small increase in daily and peak hour traffic due to the 20 dwelling units would not have a significant impact on traffic safety, transit service, or non-motorized travel.

MITIGATION MEASURES

Table 40 summarizes all locations where mitigation under IS may be applicable. These include locations forecast to operate at LOS F that would meet the King County 30 trip/20 percent threshold, as well as locations where a safety hazard has been or potentially could be identified

by the Director and would be impacted by traffic from the RRE Proposed Action. Some locations included in the table do not meet the traffic threshold and have not been identified as a safety hazard. These locations are included because King County has ongoing safety/operational concerns about them, particularly if baseline or other improvements are not constructed (in some cases, MPS fees would cover improvements assumed under the baseline condition). **Table 40** includes intersections and roadways under King County, City of Redmond, and WSDOT jurisdiction. The table identifies the LOS at intersections under various potential future improvement conditions. Roadways are identified as being above, approaching, or below the capacity based on identified potential improvements. One or more potential mitigation strategies are also provided, as applicable.

Redmond Ridge East

The RRE Proposed Action would be subject to King County's Integrated Transportation Program (ITP), covering Concurrency, Mitigation Payment System, and Intersection Standards:

- Payment of King County MPS fees, which are currently $4,698 per single-family dwelling unit and $2,818 per multifamily dwelling unit (fees adopted in December 1999). The RRE proposed residential are located in MPS zone 394 of the Transportation Concurrency Level of Standards Status Map that became effective in June 2002. The RRE recreation complex is located in MPS zone 372 of the concurrency map in effect at the time of the application for its concurrency. (The Panhandle site is located in MPS zone 394 of that map, which was in effect at the time of its application; mitigation associated with the Panhandle Plat is discussed separately below. In 2002, the County changed its concurrency model, including the zone numbers applying to the RRE and Panhandle sites.) The MPS fees are intended to address development impacts on area roads, based on the current MPS fee schedule. **Figure 34** shows the locations of roadway projects covered by the MPS fees in the RRE vicinity. The MPS fees for RRE would cover mitigation of potential off-site project impacts, including the following King County road projects:
  - -- Novelty Hill Road (Redmond City Limits to 244th Avenue NE)
  - -- Avondale Road widening (various projects from Redmond to Woodinville-Duvall Road)
  - -- Woodinville-Duvall Road/Avondale Road intersection
  - -- NE 132nd/NE 128th Street improvements at Avondale Road
  - -- Union Hill Road (198th to 206th Avenues NE)
  - -- Sunset/I-90 Interchange (King County contribution)
  - -- North and South SPAR (connection to I-90)
  - -- Sahalee Way (NE 50th to SR 202); connects in with WSDOT SR 202 widening project
  - -- NE 124th Street (NE 132nd Street to SR 202); widening across the Sammamish Valley
  - -- NE 124th/NE 128th Streets (SR 202 to 172nd Avenue NE)
  - -- Woodinville-Duvall Road (Avondale Road to 171st Avenue NE)

Table 40
RRE INTERSECTION STANDARDS MITIGATION

Ref No. (Figure 25)	Intersection (Jurisdiction)	IS Thresholds[1]		Analysis Condition[4] *(first line for each intersection/roadway is the 2010 Baseline Analysis Condition)*	2010 w/o RRE[5]		2010 w/ RRE Proposed Action		Comments Regarding Potential or Proposed Mitigation[6]
		30/20 Rule[2]	Current HAL/HARS[3]		AM Peak	PM Peak	AM Peak	PM Peak	
Intersections/Roadways with Significant Impacts from RRE									
2	Novelty Hill Rd/Avondale Rd (Redmond)	Yes	No	***KC CIP[7] 100901 widening assumed***	D	E	D	E	No improvements beyond CIP project identified. RRE would contribute through MPS fees. Redmond Ridge and Trilogy UPD permits require pro-rata share to CIP project since they were approved prior to Redmond/King County interlocal agreement.
3	Novelty Hill Rd/Redmond Rd (King County)	Yes	No	***KC CIP 100901 and CIP 100992 widening assumed*** • KC CIP 100901 and 100992 plus add southbound turn lane • KC CIP 100901 and 100992 plus install signal	F	D	F F C	D C B	A final decision on improvement has not been identified pending Novelty Hill Road CIP environmental review. If the King County CIP project provides adequate improvements to resolve LOS F condition, mitigation of project impacts could be through payment of revised MPS fees that include the improvement project. If CIP project is not defined or funded at the time that RRE would impact the intersection with 30 peak hour trips, then applicant would work with King County to determine appropriate improvement based on status of Novelty Hill Road CIP project. The improvements could include restricting south-to-east left turns, constructing a separate south-to-east left-turn lane, or installing a traffic signal (if warranted).
4	Novelty Hill Rd/208th Ave NE (King County)	Yes	HAL (1998–2000)	***KC CIP 100992 widening assumed***	C	D	C	D	Applicant would mitigate impacts through payment of MPS fees based on CIP project. Prior UPD improvements in 2001 to install turn lanes addressed HAL.
6	Novelty Hill Rd/Redmond Ridge Retail Access (King County)	Yes	No	***Existing condition with Redmond Ridge retail open*** • Restrict Redmond Ridge retail access (south leg) to right-in/right-out and provide a south-to-east left-turn acceleration/merge lane • Widen Novelty Hill Road to have two westbound through lanes • Existing plus restrict lefts and throughs exiting side streets	F	F	F F F B	F C F C	Applicant would work with King County to restrict left turns and through movements from Redmond Ridge retail site and from 224th Ave NE. This intersection has been identified as a potential location for Director's exception to Intersection Standards.
7	Novelty Hill Rd/Redmond Ridge Dr (King County)	Yes	No	***Existing geometry with westbound left turn protected phase*** • Widen Novelty Hill Road to have two westbound through lanes • Existing geometry with Access Alternative B • Existing geometry with Access Alternative C • Existing geometry with Access Alternative C-1	C	E	C C C C C	F D F E E	King County is evaluating alternatives for Novelty Hill Road as part of its CIP project. Mitigation could be provided through construction of a second westbound through lane at the intersection. Access Alternatives C or C-1 could mitigate project impacts. Applicant could also mitigate impacts through expansion of the scope of the Novelty Hill Road CIP (beyond the 3/5 lane concept), either paying for and/or constructing the improvement, or through a revised MPS fee schedule, depending upon the County's decision to incorporate the widening into the CIP project and MPS fee program.
8	Novelty Hill Rd/234th Ave NE (King County)	Yes	No	***Existing condition with Village retail open*** • Existing plus restrict southbound left turns/through movements	F	E	F E	F D	This intersection has been identified by King County as a potential location for Director's exception to Intersection Standards due to low side street volume. If required, applicant would work with King County to restrict left turns and through movements from southbound 234th Ave NE during peak hours.
10	Novelty Hill Rd/Eastridge Dr (King County)	Yes	No	***Existing condition with Village access and Trilogy access open, with signal per Trilogy permit*** • Approved Trilogy permit plus modify northbound approach to allow left turns from two lanes • Approved Trilogy permit plus Access Alternative B • Approved Trilogy permit plus Access Alternative C	D	C	F E F F	D C D D	Applicant proposes to modify northbound approach to allow left turns from two lanes.

Table 40
RRE INTERSECTION STANDARDS MITIGATION (CONTINUED)

Ref No (Fig 25)	Intersection (Jurisdiction)	IS Thresholds[1]		Analysis Condition[4] *(first line for each intersection/roadway is the 2010 Baseline Analysis Condition)*	2010 w/o RRE[5]		2010 w/ RRE Proposed Action		Comments Regarding Potential or Proposed Mitigation[6]
		30/20 Rule[2]	Current HAL/HARS[3]		AM Peak	PM Peak	AM Peak	PM Peak	
—	SR 520/SR 202 Interchange Overcrossing (WSDOT)	Yes	Interchange is identified as a HAL	***Existing condition*** • With completion of Stage 3 interchange improvements to construct another two-lane overcrossing, construct a west -to-west flyover ramp, and modify interchange ramp intersections (part of Nickel package)	Above Capacity	Approaching Capacity	Above Capacity Below Capacity	Approaching Capacity Below Capacity	WSDOT has requested proportionate share payment to SR 520 improvement including interchange at SR 202, HOV lanes to W Lake Sammamish Pkwy, and interchange improvements at W Lake Sammamish Pkwy. King County does not apply Intersection Standards to HOV lanes or to interchange improvements (except at freeway ramp intersections). Therefore, no mitigation is identified for the freeway overcrossing. The applicant would only be required to contribute to ramp intersection-related improvements at SR 520/SR 202 interchange (see intersections 14 and 15).
17	Avondale Rd/Union Hill Rd (Redmond)	Yes	Possible-City did not identify HAL	***With City TIP project C14 to add northbound right-turn lane, second southbound left-turn lane, third eastbound through lane, provide exclusive turn lanes on westbound approach, and modify signal*** • Redmond C14 project and WSDOT Stage 3 interchange project	F	E	F E	E F	No additional improvements identified at this location. Applicant would mitigate its impacts through payment of MPS fees per Interlocal Agreement, which the City could apply to other corridors that could divert traffic from this intersection. City-identified improvements to Avondale Road (southbound HOV lane), 185th Ave NE, 188th Ave NE, and 160th Ave NE/ SR 202, which are part of the MPS program, may be appropriate corridors for applying MPS payments.
	Novelty Hill Rd (Redmond Ridge Dr to 234th Ave NE) (King County)	Yes	No	***Existing condition*** • Widen to provide two lanes in each direction • Existing plus Access Alternative C	Above Capacity	Above Capacity	Above Capacity Below Capacity Above	Above Capacity Below Capacity Approaching	Widening of Novelty Hill Road to four lanes east of Redmond Ridge Drive is needed for roadway capacity under all conditions. Project may be incorporated into KC CIP 100992 and as part of MPS. Applicant would mitigate impacts through payment of MPS fees.
	Avondale Rd (Union Hill Rd to Novelty Hill Rd)	Yes	Possible—City did not identify HAL	***Existing condition plus intersection improvements defined in Redmond TIP and King County CIP***	Above Capacity	Above Capacity	Above Capacity	Above Capacity	No improvements beyond CIP projects identified. City does not identify major widening of Avondale Road corridor in its long-range Transportation Facilities Plan (TFP). The City's TFP does include an improvement to provide a HOV lane on Avondale Rd between Union Hill Rd and SR 520. The City TFP also includes improvements in other corridors, such as 185th Ave NE, 188th Ave NE, and 160th Ave NE/SR 202, which would divert traffic from the corridor. Applicant would contribute through MPS fees based on Interlocal Agreement.
Intersections/Roadways where a Potential Safety Hazard Could Reasonably Result									
11	Novelty Hill Rd/243rd Ave NE (King County)	No	No	***Existing conditions*** • Existing plus construct westbound left-turn, acceleration/ merge lane and two-stage gap acceptance • Existing plus install signal • Existing plus install signal and provide free-flow westbound through lane • Existing plus Access Alternative A	F	F	F D B A F	F F A A F	Project does not trigger Intersection Standards based on traffic volumes and location does not have an existing accident problem. Forecast traffic volumes would not likely warrant installation of a traffic signal. If the Director determines that a hazard to safety could reasonably result due to the RRE development and King County defines an improvement project for the intersection, then the applicant could pay a pro-rata share. If full funding for a safety improvement is not available, then the applicant could be required to mitigate the potential impact of RRE at the intersection.
	Novelty Hill Rd (243rd to W Snoqualmie Valley Rd) (King County)	No	HARS	***Existing condition plus Redmond Ridge/Trilogy permit requirement to construct 5- to 8-foot-wide shoulders on north side***	Above Capacity	Approaching Capacity	Above Capacity	Approaching Capacity	Redmond Ridge and Trilogy improvement may reduce existing safety hazards. King County is conducting feasibility study of additional improvements as part of CIP 100992. If King County defines and funds a safety or operational improvement, the applicant could mitigate the development impacts through payment of a proportionate share of the cost. If King County defines an improvement that adds capacity, then the project could be added to the MPS program and mitigation would be through payment of adjusted MPS fees.

Table 40
RRE INTERSECTION STANDARDS MITIGATION (CONTINUED)

Ref No (Fig 3)	Intersection (Jurisdiction)	IS Threholds[1]		Analysis Condition[4] *(first line for each intersection/roadway is the 2010 Baseline Analysis Condition)*	2010 w/o RRE[5]		2010 w/ RRE Proposed Action		Comments Regarding Potential or Proposed Mitigation[6]
		30/20 Rule[2]	Current HAL/HARS[3]		AM Peak	PM Peak	AM Peak	PM Peak	
Intersections/Roadways without Significant Impacts from RRE									
13	NE 124th St/W Snoqualmie Valley Rd (King County)	No	HAL (1998–2000)	***Assumes completion of KC CIP 201101 to add southbound left turn lane, add northbound right-turn lane, and modify signal***	E	C	D	C	No mitigation proposed since interim signal installed in 2002 should resolve HAL; RRE is below traffic thresholds.
14	SR 520 WB/SR 202 (WSDOT)	No	Interchange is identified as a HAL	***Existing condition*** • With completion of Stage 3 interchange improvements to construct another 2-lane overcrossing, construct a west - to-west flyover ramp, and modify interchange ramp intersections (part of Nickel package)	D	E	D F	E E	Project traffic does not impact this intersection so no mitigation identified (also see SR 520/SR 202 interchange overcrossing)
15	SR 520 EB/SR 202 (WSDOT)	No	Interchange is identified as a HAL	***Existing condition*** • With completion of Stage 3 interchange improvements to construct another 2-lane overcrossing, construct a west - to-west flyover ramp, and modify interchange ramp intersections (part of Nickel package)	E	D	E E	D D	Project traffic does not impact this intersection so no mitigation identified (also see SR 520/SR 202 interchange overcrossing)
21	Union Hill Rd/238th Ave NE (N) (King County)	No	No	***KC CIP 101101 to construct northbound left-turn lane and install signal***	B	B	B	B	King County CIP project would provide acceptable level of service and safety. Construction programmed for 2004, so RRE development will not have a significant impact. No mitigation proposed.
22	Union Hill Rd/238th Ave NE (S) (King County)	No	No	***Existing condition*** • Existing plus construct southbound left-turn lane, westbound left-turn lane, west-to-south acceleration/ merge lane and two-stage gap acceptance • Existing plus signal	F	F	F C C	F E B	Project does not trigger Intersection Standards and there has not been a safety hazard, therefore no project mitigation is identified. The additional turn lanes and two-stage gap improvements may not work due to a driveway on the west approach. Forecast traffic volumes will not likely meet signal warrants.
23	SR 202/236th Ave NE (WSDOT)	No	Intersection is located in WSDOT High Accident Corridor, but intersection is not a HAL	***Existing condition*** Existing condition plus construct westbound right-turn lane	F	E	F E	E D	Project does not trigger Intersection Standards and there has not been a safety hazard at the intersection, therefore no project mitigation is identified.

Table 40
RRE INTERSECTION STANDARDS MITIGATION (CONTINUED)

Ref No (Fig 3)	Intersection (Jurisdiction)	IS Threholds[1]		Analysis Condition[4] *(first line for each intersection/roadway is the 2010 Baseline Analysis Condition)*	2010 w/o RRE[5]		2010 w/ RRE Proposed Action		Comments Regarding Potential or Proposed Mitigation[6]
		30/20 Rule[2]	Current HAL/HARS[3]		AM Peak	PM Peak	AM Peak	PM Peak	
31	Village Retail Access/ Trilogy Parkway (King County)	Yes	No	***Approved Trilogy (Village at Redmond Ridge) permit and roadway design*** • Approved Trilogy roadway design plus Access Alternative B or Access Alternative C-1 Approved Trilogy roadway design plus Access Alternative C	B	C	B B C	E E F	Private driveway intersection not regulated by Intersection Standards. Mitigation not needed for level of service. Applicant would modify approved Trilogy (Village) roadway design to extend northbound left-turn lane approaching Novelty Hill Road to reduce impacts of traffic queues blocking Village retail access drive.

Source: The Transpo Group, 2004.

1. IS = King County Intersection Standards.
2. 30/20 Rule: IS establishes a threshold of 30 or more added vehicles and at least 20 percent of the new traffic generated by a development for evaluating intersection levels of service. If a development meets the traffic thresholds at an intersection forecast to operate at LOS F, then mitigation may be required.
3. HAL/HARS = High Accident Location/High Accident Roadway Segment. IS also defines a significant impact as a roadway intersection or approach lane where the Director determines that a hazard to safety could reasonably result if impacted by traffic from a proposed development.
4. The analysis condition identifies assumed improvements or changes to the roadway or intersection. The various conditions are presented in the evaluation of project impacts. The italicized first line identifies the baseline conditions assumed in the analysis based on funded improvement projects.
5. RRE = Redmond Ridge East
6. MPS = Mitigation Payment System; UPD = Urban Planned Development; CIP = Capital Improvement Program.
7. KC CIP = King County Capital Improvement Program; the number that follows it indicates the KC CIP project number (see Table 5 in **Appendix H**).

Figure 34
King County and Redmond MPS Projects

Under King County's Intersection Standards, a project is defined as having a significant adverse impact if an intersection operates at a forecast LOS F, is impacted by 30 or more trips from a development in one hour, and is impacted by at least 20 percent of the new traffic generated by the development within that hour. The RRE Proposed Action would meet the 30-trip and 20-percent IS threshold at intersections along Novelty Hill Road between Avondale Road and Eastridge Drive. King County's traffic volume thresholds would also be met along Avondale Road between Union Hill and Novelty Hill Roads. Mitigation may be required at the following intersections under King County's jurisdiction, based on LOS F conditions and the traffic volume thresholds (see **Appendix H** for details of the identified improvements):

-- (#3) Novelty Hill Road/Redmond Road. Improvements at this intersection are being defined as part of King County's current CIP project. Project mitigation would be incorporated into the MPS fees for the CIP project based on the County's revised improvement project based on 2028 traffic forecasts, operations, and safety analyses. The Novelty Hill Road project is currently included in the County's MPS program.

-- (#6) Novelty Hill Road/Redmond Ridge Retail Access. The LOS F at this intersection would affect fewer than 25 vehicles per hour. As part of the Redmond Ridge UPD approval, King County is monitoring traffic safety at the intersection. If significant safety hazards develop, King County may restrict left turns with or without RRE. King County may also identify additional improvements as part of its Novelty Hill Road CIP project, the cost of which could be incorporated into the MPS fee program. Applicant would work with King County to restrict left turns and through movements from Redmond Ridge retail site and from 224th Avenue NE.

-- (#7) Novelty Hill Road/Redmond Ridge Drive. The King County CIP project for Novelty Hill Road is evaluating a five-lane alternative as well as widening of only selected segments of the corridor. The King County analyses will be based on 2028 traffic forecasts, not the 2010 volumes developed for this analysis. Widening this segment to four/five lanes could be added to the MPS program or the widening could be a mitigation of this project. Access Alternatives C or C-1 could also mitigate project impacts; however, LOS F would likely occur shortly beyond the 2010 horizon year.

-- (#8) Novelty Hill Road/234th Avenue NE. Applicant would work with King County to restrict left turns and through movements from southbound 234th Avenue NE.

-- (#10) Novelty Hill Road/Eastridge Drive. Applicant proposes to modify northbound approach to allow left turns from two lanes. King County has reviewed potential improvements as part of preliminary planning and design of Eastridge Drive under the Trilogy UPD.

- Under King County's Intersection Standards, mitigation could also be required where King County determines that a hazard to safety could reasonably result due to the impacts from the RRE Proposed Action (even though the traffic volume thresholds would not be met), including at the following potential locations under King County's jurisdiction (see **Appendix H** for details on the identified improvements):

  -- The section of Novelty Hill Road approaching West Snoqualmie Valley Road (a King County HARS). The Redmond Ridge and Trilogy UPDs are conditioned to construct shoulders and improve drainage on this segment, which may improve safety and eliminate the HARS. Project traffic impacts could be mitigated through contribution of a proportionate share payment to any safety or operational improvements defined as part of a King County study currently underway. If King County defines

improvements that add capacity and address safety, project mitigation could be handled by adding the project to the MPS programs.

-- (#11) Novelty Hill Road/243rd Avenue NE. Project does not trigger Intersection Standards based on traffic volumes. Forecast traffic volumes would not likely warrant signal. If the Director determines that a hazard to safety could reasonably result due to the RRE development and King County defines an improvement project for the intersection, then the applicant could pay a pro-rata share. If full funding for a safety improvement is not available, then the applicant could be required to mitigate the impact of RRE at the intersection.

-- Trilogy Parkway approaching Novelty Hill Road. Mitigation not needed for level of service. Applicant would modify approved Trilogy (Village) roadway design to extend northbound left-turn lane approaching Novelty Hill Road to reduce impacts of traffic queues blocking Village retail access drive.

- Mitigation of potential project traffic impacts in the City of Redmond would be addressed per the City's 1999 Interlocal Agreement with King County, under which King County added City of Redmond improvement projects to its MPS program. Under the agreement, approximately 12.4 percent of the current residential MPS fee for zone 393 would go toward improvements in Redmond. The City will then expend the County-collected fees on projects identified in the MPS fee list that reasonably benefit the proposed developments. The collected fees must be spent on the projects within six years, unless special circumstances or compelling reasons are identified by the City Council. Within the City of Redmond, RRE would primarily impact Avondale Road between SR 520 and Novelty Hill Road. The City has two CIP projects that will add capacity to the corridor. The City does not have additional improvements planned for Avondale Road that will add significant capacity to the corridor; therefore, the MPS program will not directly address project impacts to the section of Avondale Road north of Union Hill Road or to the Avondale Road/Union Hill Road intersection. Mitigation would be through providing improvements to other corridors, such as 160th, 185th, and 188th Avenues NE, which are included in the MPS fees per the Interlocal Agreement. Projects on the City's MPS list are shown in **Appendix H**.

- An Interlocal agreement between WSDOT and King County for reviewing traffic impacts from proposed developments applies King County's Intersection Standard (discussed above) to facilities under WSDOT jurisdiction. WSDOT has indicated that a pro-rata share payment would be requested to mitigate impacts of the RRE Proposed Action to the following (see **Appendix H** for details of WSDOT's planned improvements at these locations):
  -- SR 520 (SR 202 – W Lake Sammamish Parkway). Mitigation would only apply to SR 202/SR 520 interchange and overcrossing under Intersection standards.
  -- SR 203/NE 124th Street intersection, where WSDOT has plans to construct a roundabout. WSDOT improvement scheduled to be constructed in 2004, prior to any impact of the RRE development; therefore, no mitigation identified.
  -- SR 202 (SR 520 to Sahalee Way). Project is fully funded and construction is slated to start in 2004. RRE would not trigger IS traffic thresholds.

- Implementation of a transit/TDM program jointly with the Redmond Ridge UPD, wherever possible. Based on the Redmond Ridge UPD program, this could include: transportation coordination; promotion of alternative transportation options; ridematching services; providing a free one-month transit pass for new residents; posting of

ridesharing and transit information; providing on-site bicycle and pedestrian facilities; commuter surveys; shuttle service; transit shelters at stops serving RRE; and/or provision of an on-site or off-site park-and-ride lot.

- Use of informal pedestrian access routes to the recreation complex from the 248th Avenue NE or 255th Avenue NE corridors would be monitored. If significant parking and/or traffic impacts along these routes are associated with the recreation complex, then additional mitigation measures may be needed. These could include installing fences or other restrictive measures to minimize access from these corridors through sensitive areas.

Panhandle

The Panhandle plat would be subject to King County's ITP, covering Concurrency, Mitigation Payment System, and Intersection Standards:

- Payment of MPS fees, which are currently $4,784 per dwelling unit. The Panhandle site is located within MPS zone 394 of the County's concurrency map that was in effect at the time of the concurrency application.
- 255th Avenue NE between NE 85th Street and the project site would be improved to meet the requirements of KCRS for a rural subaccess street.
- Improvements may be required to mitigate project impacts along NE 80th Street to provide for non-motorized travel, emergency vehicles, or if King County identifies that a hazard to safety could reasonably result.
- Mitigation of potential project impacts within Redmond would be through the King County/ City of Redmond Interlocal Agreement relating to MPS fees. The Panhandle residential units would be located in MPS Zone 394. Based on the Interlocal Agreement, in this MPS zone approximately 10 percent of the King County MPS fees would be conveyed to Redmond for mitigation of project impacts. The MPS fees would cover project impacts to the City of Redmond projects shown in **Appendix H**.

Other Possible Mitigation Measures

- A trail connection between the northern end of 255th Avenue NE and the trail located in the BPA transmission line corridor in the northwest portion of the Panhandle site could be provided to improve non-motorized connections if a roadway connection to 248th Avenue NE is not provided.

- Construction of Access Alternatives A or B as described in **Appendix I**, to eliminate the need for a variance to the 100-lot and cul-de-sac length requirements of KCRS for the Panhandle. Or, providing a gated, secondary access between the Panhandle and 248th Avenue NE for use by emergency vehicles only.

- Additional TDM measures, including provision of a shuttle service, provision of bus shelters at key locations in the project, and provision of an on- or off-site park-and-ride lot.

- To the extent that the proposal does not meet one or more of the County's standards for transit-oriented design or emergency vehicle access, the design and width of some RRE on-site roadways could be increased.

SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

Development of RRE and the Panhandle would generate additional traffic volumes on the area roadway system. Without implementing transportation facility improvements, levels of service would be lowered at certain intersections. However, with implementation of the transportation improvements identified in this section of the EIS to accommodate the projected vehicle travel demand in 2010, the transportation system would not experience significant changes in levels of service, queuing, or volume-to-capacity ratios on area roadway segments, with the exception of the segment of Avondale Road north of Union Hill Road and the Avondale Road/Union Hill Road intersection.

The segment of Avondale Road north of Union Hill Road would experience increased traffic volumes that would not be directly mitigated with identified improvements, including through the King County MPS program. However, this road segment would experience congestion with or without the Proposed Actions. Indirect mitigation could occur through payment of MPS fees which (per Interlocal Agreement) the City of Redmond could apply to other corridors that could divert traffic from this intersection. Improvements to 185th Avenue NE, 188th Avenue NE, and/or 160th Avenue NE/ SR 202 which are part of the MPS program may be appropriate corridors for improvement. However, not all of these projects are fully funded, and additionally they may not resolve the Avondale Road capacity condition.

The Avondale Road/Union Hill Road intersection would experience LOS F conditions in the AM and/or PM peak hour that may not be directly mitigated with identified improvements, including through the King County MPS program, depending on the construction of programmed improvements. Indirect mitigation could occur through payment of MPS fees which the City of Redmond could apply to other corridors as discussed above for the segment of Avondale Road north of Union Hill Road. However, none of these projects are fully funded, and additionally they may not resolve the Avondale Road/Union Hill Road intersection LOS F condition.

With the exception of the segment of Avondale Road north of Union Hill Road and the Avondale Road/Union Hill Road intersection, no other significant unavoidable adverse impacts to the transportation system would result.

No significant unavoidable adverse impacts to transit are anticipated.